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14. ANSWER 1 OF 57. HCAPIUM. COPYRIGHT. AJS
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11. ANSWER 1 OF 57 HCAELUS COPYRIGHT 1985
 12. 11/11/85 HCAELUS
 13. 11/11/85
 14. Microbical and sanitizing soap compositions
 15. Lipes, John A.
 16. USA
 17. U.S., 11 pp., Cont. of U. S. Ser. No. 530,681, Spain 1-11.
 18. CODEN: USXXAM
 19. Patent
 20. English
 21. WT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 5041474	A	1993-03-04	US 1997-01361	1997-01-04
US 1005-55,6-1		1995-10-13		

22. The invention relates to microbical and sanitizing soap compns. that incorporate agents with tuberculocidal properties in ready-to-use form that has gel properties or thixotropic properties and to soap compns. suitable for diln. in or with water or non-aqueous solvent to produce gel-like or thixotropic soaps, or dispersions ranging from free flowing to solidified forms. The ready-to-use compns. and the soap compns. are applied for purposes of personal or animal hygiene or sanitizing on hair, hands and skin or other body parts, or are applied on inanimate surfaces and objects that need to be sanitized. For example, a soap compn. contained Na C14-16 .alpha.-olefin sulfonates (40 %), lactic acid (88 %), xanthan gum 0.5, Aloe vera powder 0.1, lemon oil 0.1, and water b.s. to 100 %.

23. WT 12

24. Ambice; US 4545979 1985 HCAELUS
 25. Anon; DE 3229097 1993 HCAELUS
 26. Anon; GB 2216419 1994 HCAELUS
 27. Brekken; US 4945110 1990 HCAELUS
 28. Curtis; US 4213961 1980 HCAELUS
 29. CITATIONS AVAILABLE IN THE RE FORMAT

144 403 144 1

14. ANSWER: 3 17 HEMELUS COPYRIGHT L. ASS
 15. 1-1111-446 HEMELUS
 16. 1-1111-446
 17. Non-Hemolysing Water-Sol. Gels Containing Silicon
 18. Tokyo, Japan
 19. Eisai Co., Ltd., Japan
 20. (Pat. Exam. Tokyo, Japan, 7 pp.)
 COUNTRY: JAPAN
 DT Patent
 LA Japanese
 EAS. INT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
11 1111-446	AL	1983-04	JP 1983-461-7	1-1111

AB The preparations contain (A) 3, 5, 6 silicone gel compn., (B) 1, 11-silencing agents, (C) water-sol. polymers, and (D) H₂O. The preparations show good water resistance and have no stickiness. A gel was prepd. from (A) 1, 11, polyoxyethylene H₂O-sol. alkyl ether phosphate 1.1, 1.3, 1.5, 1.7, 1.9, 2.1, 2.3, 2.5, 2.7, 2.9, 3.1, 3.3, 3.5, 3.7, 3.9, 4.1, 4.3, 4.5, 4.7, 4.9, 5.1, 5.3, 5.5, 5.7, 5.9, 6.1, 6.3, 6.5, 6.7, 6.9, 7.1, 7.3, 7.5, 7.7, 7.9, 8.1, 8.3, 8.5, 8.7, 8.9, 9.1, 9.3, 9.5, 9.7, 9.9, 10.1, 10.3, 10.5, 10.7, 10.9, 11.1, 11.3, 11.5, 11.7, 11.9, 12.1, 12.3, 12.5, 12.7, 12.9, 13.1, 13.3, 13.5, 13.7, 13.9, 14.1, 14.3, 14.5, 14.7, 14.9, 15.1, 15.3, 15.5, 15.7, 15.9, 16.1, 16.3, 16.5, 16.7, 16.9, 17.1, 17.3, 17.5, 17.7, 17.9, 18.1, 18.3, 18.5, 18.7, 18.9, 19.1, 19.3, 19.5, 19.7, 19.9, 20.1, 20.3, 20.5, 20.7, 20.9, 21.1, 21.3, 21.5, 21.7, 21.9, 22.1, 22.3, 22.5, 22.7, 22.9, 23.1, 23.3, 23.5, 23.7, 23.9, 24.1, 24.3, 24.5, 24.7, 24.9, 25.1, 25.3, 25.5, 25.7, 25.9, 26.1, 26.3, 26.5, 26.7, 26.9, 27.1, 27.3, 27.5, 27.7, 27.9, 28.1, 28.3, 28.5, 28.7, 28.9, 29.1, 29.3, 29.5, 29.7, 29.9, 30.1, 30.3, 30.5, 30.7, 30.9, 31.1, 31.3, 31.5, 31.7, 31.9, 32.1, 32.3, 32.5, 32.7, 32.9, 33.1, 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328.5, 328.7, 328.9, 329.1, 329.3, 329.5, 329.7, 329.9, 330.1, 330.3, 330.5, 330.7, 330.9, 331.1, 331.3, 331.5, 331.7, 331.9, 332.1, 332.3, 332.5, 332.7, 332.9, 333.1, 333.3, 333.5, 333.7, 333.9, 334.1, 334.3, 334.5, 334.7, 334.9, 335.1, 335.3, 335.5, 335.7, 335.9, 336.1, 336.3, 336.5, 336.7, 336.9, 337.1, 337.3, 337.5, 337.7, 337.9, 338.1, 338.3, 338.5, 338.7, 338.9, 339.1, 339.3, 339.5, 339.7, 339.9, 340.1, 340.3, 340.5, 340.7, 340.9, 341.1, 341.3, 341.5, 341.7, 341.9, 342.1, 342.3, 342.5, 342.7, 342.9, 343.1, 343.3, 343.5, 343.7, 343.9, 344.1, 344.3, 344.5, 344.7, 344.9, 345.1, 345.3, 345.5, 345.7, 345.9, 346.1, 346.3, 346.5, 346.7, 346.9, 347.1, 347.3, 347.5, 347.7, 347.9, 348.1, 348.3, 348.5, 348.7, 348.9, 349.1, 349.3, 349.5, 349.7, 349.9, 350.1, 350.3, 350.5, 350.7, 350.9, 351.1, 351.3, 351.5, 351.7, 351.9, 352.1, 352.3, 352.5, 352.7, 352.9, 353.1, 353.3, 353.5, 353.7, 353.9, 354.1, 354.3, 3

	PATENT NO.	ISSUE DATE	APPLICATION NO.	FILED
1	JP 1-104181	APR 1990-12-14	JP 1987-14331	DEC 1987-12-14

AB In aq. media contain 0.1-1.0 wt.% water-absorbing; 0.1-0.5 wt.% surfactants. Artificial media comprising the aq. media and soil, sand, inorg. substances, and/or supports are also tested. *Primula polyantha* planted in an aq. medium contg. 0.07 wt.% polyacrylic acid; polyacrylic acid; Na salt and 0.10 wt.% **cetyltrimethylammonium** chloride (Quartamin 6W-1) showed better growth than plants in a control medium with it.

	PATENT NO.	KIND	DATE	APPLICATION NO.	A.E.
FI	FR 1758677	A1	1986-018	FR 1986-13687	19-11-86
	95 1758677	B1	1986-1-1		
	WO 87-046	A1	1987-022		
DE, GB, SE, US					

The title compounds contain 1.0 mole-% fixing polymer, 1.0 mole-% gelatin, 0.5 mole-% glycerol, 0.5 mole-% water, and 0.5 mole-% sodium lauryl sulfate. The gelatin is a 10% solution in water. The viscosity of the gel is 100 cps. The gel, applied to hair with hands, dried rapidly, and imparted good hold and shine. The hair also exhibited good shine and a natural feel. Hair styled with gels based on the same components, but having a viscosity outside the range defined, was wettened by the gel and the hair style was flattened.

04- ANSWER: 1. HORMONE 2. EYE SIGHT 3. AND
05- 1999-14-10- HAWKING
06- 10-10-71
07- 1999-14-10- HAWKING 10-10-71
08- 1999-14-10- HAWKING 10-10-71
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PAIENT NO.	PLINT	DATE	APPLI CATI N N O.	AGE
US 3773871	A	1997-031	US 1994-34841	19-41119
US 3774000	A	1997-011	US 1994-34841	19-41119
US 3774000	A1	1997-011	WO 1994-02878	19-41119
RW: GR, JE				
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US 3801878	TL	1998-011	JP 1991-01117	19-41119
AT 17-171	E	1998-011	AT 1991-01117	19-41119
US 3801878	T3	1998-011	ES 1991-01117	19-41119
US 3801878	A	1998-011	US 1991-01117	19-41119
US 3801878	A1	1998-011	WO 1991-02878	19-41119
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US 3801878	A1	1998-011	AT 1991-01117	19-41119
US 3801878	EL	1998-011	JP 1991-01117	19-41119
US 3801878	TL	1998-011	JP 1991-01117	19-41119
US 3801878	A1	1998-011	EP 1991-01117	19-41119
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Figure 1. The effect of the concentration of the H_2O_2 solution on the amount of the released H_2O from the H_2O_2 -sensitive hydrogel. The amount of the released H_2O was measured by the weight change of the hydrogel. The concentration of the H_2O_2 solution was 0, 0.01, 0.05, 0.1, 0.5, 1, 5, and 10 wt. %.

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04. Gas and laserless precursor filled microspheres, and : : provide a del-
05. iverable and s.t. delivery vehicles for various active ingredients,
06. including drugs and cosmetics. Gas and laserless pre- : : filled
07. micro capsules were prepared from divinyltoluene/epoxy : : resin.

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1. ANSWER 1. F. H. HANDEL. COPYRIGHT. AM

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1. *Chlorophyll a* and *Chlorophyll b* were determined by the method of Lichtenthaler and Whistler (1973). The total chlorophyll content was determined by the method of Arar and Cook (1980). The carotenoid content was determined by the method of Lichtenthaler and Whistler (1973).

1. *Journal of the American Medical Association*, 1997; 277: 1001-1005.

1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 2679, 26

17. Manufacture of stable emulsions of oil soluble drugs in aqueous solutions.

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Journal of Management Education 30(6)p. 789-804
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Figure 1. Schematic representation of the experimental design. The subjects were divided into two groups: the control group and the experimental group. The control group was divided into two subgroups: the control group and the experimental group. The experimental group was divided into two subgroups: the control group and the experimental group. The control group was divided into two subgroups: the control group and the experimental group. The experimental group was divided into two subgroups: the control group and the experimental group.

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TABLE 1		TABLE 2		TABLE 3		TABLE 4		TABLE 5		TABLE 6		TABLE 7		TABLE 8		TABLE 9		TABLE 10		TABLE 11		TABLE 12		TABLE 13		TABLE 14		TABLE 15		TABLE 16		TABLE 17		TABLE 18		TABLE 19		TABLE 20		TABLE 21		TABLE 22		TABLE 23		TABLE 24		TABLE 25		TABLE 26		TABLE 27		TABLE 28		TABLE 29		TABLE 30		TABLE 31		TABLE 32		TABLE 33		TABLE 34		TABLE 35		TABLE 36		TABLE 37		TABLE 38		TABLE 39		TABLE 40		TABLE 41		TABLE 42		TABLE 43		TABLE 44		TABLE 45		TABLE 46		TABLE 47		TABLE 48		TABLE 49		TABLE 50		TABLE 51		TABLE 52		TABLE 53		TABLE 54		TABLE 55		TABLE 56		TABLE 57		TABLE 58		TABLE 59		TABLE 60		TABLE 61		TABLE 62		TABLE 63		TABLE 64		TABLE 65		TABLE 66		TABLE 67		TABLE 68		TABLE 69		TABLE 70		TABLE 71		TABLE 72		TABLE 73		TABLE 74		TABLE 75		TABLE 76		TABLE 77		TABLE 78		TABLE 79		TABLE 80		TABLE 81		TABLE 82		TABLE 83		TABLE 84		TABLE 85		TABLE 86		TABLE 87		TABLE 88		TABLE 89		TABLE 90		TABLE 91		TABLE 92		TABLE 93		TABLE 94		TABLE 95		TABLE 96		TABLE 97		TABLE 98		TABLE 99		TABLE 100		TABLE 101		TABLE 102		TABLE 103		TABLE 104		TABLE 105		TABLE 106		TABLE 107		TABLE 108		TABLE 109		TABLE 110		TABLE 111		TABLE 112		TABLE 113		TABLE 114		TABLE 115		TABLE 116		TABLE 117		TABLE 118		TABLE 119		TABLE 120		TABLE 121		TABLE 122		TABLE 123		TABLE 124		TABLE 125		TABLE 126		TABLE 127		TABLE 128		TABLE 129		TABLE 130		TABLE 131		TABLE 132		TABLE 133		TABLE 134		TABLE 135		TABLE 136		TABLE 137		TABLE 138		TABLE 139		TABLE 140		TABLE 141		TABLE 142		TABLE 143		TABLE 144		TABLE 145		TABLE 146		TABLE 147		TABLE 148		TABLE 149		TABLE 150		TABLE 151		TABLE 152		TABLE 153		TABLE 154		TABLE 155		TABLE 156		TABLE 157		TABLE 158		TABLE 159		TABLE 160		TABLE 161		TABLE 162		TABLE 163		TABLE 164		TABLE 165		TABLE 166		TABLE 167		TABLE 168		TABLE 169		TABLE 170		TABLE 171		TABLE 172		TABLE 173		TABLE 174		TABLE 175		TABLE 176		TABLE 177		TABLE 178		TABLE 179		TABLE 180		TABLE 181		TABLE 182		TABLE 183		TABLE 184		TABLE 185		TABLE 186		TABLE 187		TABLE 188		TABLE 189		TABLE 190		TABLE 191		TABLE 192		TABLE 193		TABLE 194		TABLE 195		TABLE 196		TABLE 197		TABLE 198		TABLE 199		TABLE 200		TABLE 201		TABLE 202		TABLE 203		TABLE 204		TABLE 205		TABLE 206		TABLE 207		TABLE 208		TABLE 209		TABLE 210		TABLE 211		TABLE 212		TABLE 213		TABLE 214		TABLE 215		TABLE 216		TABLE 217		TABLE 218		TABLE 219		TABLE 220		TABLE 221		TABLE 222		TABLE 223		TABLE 224		TABLE 225		TABLE 226		TABLE 227		TABLE 228		TABLE 229		TABLE 230		TABLE 231		TABLE 232		TABLE 233		TABLE 234		TABLE 235		TABLE 236		TABLE 237		TABLE 238		TABLE 239		TABLE 240		TABLE 241		TABLE 242		TABLE 243		TABLE 244		TABLE 245		TABLE 246		TABLE 247		TABLE 248		TABLE 249		TABLE 250		TABLE 251		TABLE 252		TABLE 253		TABLE 254		TABLE 255		TABLE 256		TABLE 257		TABLE 258		TABLE 259		TABLE 260		TABLE 261		TABLE 262		TABLE 263		TABLE 264		TABLE 265		TABLE 266		TABLE 267		TABLE 268		TABLE 269		TABLE 270		TABLE 271		TABLE 272		TABLE 273		TABLE 274		TABLE 275		TABLE 276		TABLE 277		TABLE 278		TABLE 279		TABLE 280		TABLE 281		TABLE 282		TABLE 283		TABLE 284		TABLE 285		TABLE 286		TABLE 287		TABLE 288		TABLE 289		TABLE 290		TABLE 291		TABLE 292		TABLE 293		TABLE 294		TABLE 295		TABLE 296		TABLE 297		TABLE 298		TABLE 299		TABLE	
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11. *JE* 3149.17 *AL* 1007.6.3 *JE* 1036-3 *AL* 10122.4

These emulsions are made by mixing and homogenizing the oil, water, emulsifiers and all phases parts of the materials.

Stearyltrimethylammonium chloride 0.6 g was dissolved in 10 ml of dry glycerol. Stearyl alcohol, 1.0, glycerol, 0.1, and lauryl dimethylamine, 0.1, polyoxyethylene monostearate 0.1, and styrene methyl methacrylate 0.1. Then, the oily phase was emulsified with an aqueous solution of polyacrylic acid No. 4, glycerol 1.0, sodium lauryl sulfate 0.4, and H₂O 169 g and stirred with 1.0 methylcellulose 0.1 g for 30 min, which was stable at 40 degrees for 2 weeks without separation.

[illegible][illegible][illegible]

15501 IF 1005-751 1005-614
 WO 1005-01194 1005-606
 AB A cellulolytic enzyme prepn. comprising: a cellulase with reduced stability to prepn., e.g., by increasing the mol. wt. or apparent size of the cellulase protein mol. or by insolubilizing or immobilizing the cellulase. The cellulase component may be immobilized by incorporating into a gel, by the formation of stable or temporary aggregates with a reduced mol. mass, by rapid immobilization of cellulase protein in insol. components, by rapid autoimmobilization of the cellulase protein, or by adsorption to an insol. sol. carrier. The carrier is preferably a cellulose-deriv. carrier of fibrous, microcryst., or amorphous structure, and more preferably a sol. or insol. polymer, esp. a polysaccharide capable of interaction with the enzyme via a cellulose-binding domain. "EB" is catalytic domain, or a sol. polypeptidic mol. or a deriv. For example, Humicola insolens 48-kDa cellulase (1.6 pu) may be autoimmobilized in 100 g/L Avicel microcryst. cellulose by incubation in sodium phosphate buffer (0.05M, pH 7.5) at 25.degree. for 2 min, repeated centrifugation at 4000 rpm for 15 min. and 5.degree., drying the moist sediment, and milling. About 50% of the total cellulase is autoimmobilized by this procedure, and the immobilized cellulase retains full activity as "free" cellulase. The cellulase prepn. has a much lesser effect or influence on the durability or aging behavior of the cellulosic substrate than corresponding unmodified cellulases, at least having as little an effect on the look or feel, when used for treatment of cellulosic fabrics or textiles. The cellulase prepn. may be used for domestic or industrial laundering or fabric softening as an ingredient of a detergent prepn., for bio-polishing, or for stone-wash or denim fabric or other denim or other dyed fabric or garments.

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PATENT NO. 10-14, 1944

POINT DATE 10-14, 1944

APPLICATION NO. 10-14, 1944

1. NUMBER 14 10-14, 1944

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	PATENT N. O.	FIND	DATE	APPLICATION N. O.	A. B.
FI	W. 482, 847	A1	1906-111	W1 1906-4847	1906-114
	W. 482, 847	A1	1906-111		
	W: A1, A2, A3, A4, A5, A6, A7, A8, A9, A10, A11, A12, A13, A14, A15, A16, A17, A18, A19, A20, A21, A22, A23, A24, A25, A26, A27, A28, A29, A30, A31, A32, A33, A34, A35, A36, A37, A38, A39, A40, A41, A42, A43, A44, A45, A46, A47, A48, A49, A50, A51, A52, A53, A54, A55, A56, A57, A58, A59, A60, A61, A62, A63, A64, A65, A66, A67, A68, A69, A70, A71, A72, A73, A74, A75, A76, A77, A78, A79, A80, A81, A82, A83, A84, A85, A86, A87, A88, A89, A90, A91, A92, A93, A94, A95, A96, A97, A98, A99, A100				
	FW: A1, A2, A3, A4, A5, A6, A7, A8, A9, A10, A11, A12, A13, A14, A15, A16, A17, A18, A19, A20, A21, A22, A23, A24, A25, A26, A27, A28, A29, A30, A31, A32, A33, A34, A35, A36, A37, A38, A39, A40, A41, A42, A43, A44, A45, A46, A47, A48, A49, A50, A51, A52, A53, A54, A55, A56, A57, A58, A59, A60, A61, A62, A63, A64, A65, A66, A67, A68, A69, A70, A71, A72, A73, A74, A75, A76, A77, A78, A79, A80, A81, A82, A83, A84, A85, A86, A87, A88, A89, A90, A91, A92, A93, A94, A95, A96, A97, A98, A99, A100				
	W. 482, 847	A1	1906-111	W. 482, 847	1906-114
	A1 47884	A1	1906-114	A1 1906-47884	1906-114
FI	48671	A1	1906-111	W1 1906-48671	1906-114
	W: A1, A2, A3, A4, A5, A6, A7, A8, A9, A10, A11, A12, A13, A14, A15, A16, A17, A18, A19, A20, A21, A22, A23, A24, A25, A26, A27, A28, A29, A30, A31, A32, A33, A34, A35, A36, A37, A38, A39, A40, A41, A42, A43, A44, A45, A46, A47, A48, A49, A50, A51, A52, A53, A54, A55, A56, A57, A58, A59, A60, A61, A62, A63, A64, A65, A66, A67, A68, A69, A70, A71, A72, A73, A74, A75, A76, A77, A78, A79, A80, A81, A82, A83, A84, A85, A86, A87, A88, A89, A90, A91, A92, A93, A94, A95, A96, A97, A98, A99, A100				
	W. 486, 71	W1	1906-111	W. 486, 71	1906-114
FI	W. 1906-48671	1906-118			
	W. 1906-48671	1906-118			
	W. 1906-48478	1906-114			

AB Biodegradable controlled-release nanoparticles as well as non-release alternative agent delivery vehicles include surface modifications to target binding of the nanoparticles to tissues or cells in living systems, to enhance nanoparticle sustained release properties, and to protect non-particle-incorporated bioactive agents. Nanoparticles of varying diameters of up to 10 μ m, and preferably 1 μ m or 10 nm, nanoparticles having a narrow size distribution which can be surface-modified after the nanoparticles are formed is described. Techniques for modifying the surface include a silylation technique to provide siloxane, siloxane-ether, and epoxy-derivatization to functionalize the surface of the nanoparticles to covalently bind moieties of interest. The nanoparticles may also comprise hydroxy-terminated or epoxide-terminated, and/or activated polylactide copolymers, having hydrophobic segments such as poly(ϵ -caprolactone) and hydrophilic segments. The nanoparticles are useful for local intravascular administration of smooth muscle inhibitors and antithrombotic agents as part of interventional catheters or vascular revascularization such as a balloon angioplasty procedure; direct application to tissues and/or cells for gene therapy, or as the delivery of osteotropic genes or gene segments into bone pre-osteoblast cells; or oral administration in an enteric capsule for delivery of short in/peptide based vaccines.

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	PATENT NO.	HOW	DATE	APPLICATION NO.	A.B.
11	EE 68-7	AL	1968-12-1	EE 1968-4	1968-12-1
	EE 68-7B, 7C, 7D, 7E, 7F, 7G, 7H, 7I, 7J, 7K, 7L, 7M, 7N, 7O, 7P, 7Q, 7R, 7S, 7T, 7U, 7V, 7W, 7X, 7Y, 7Z	AL	1968-12-1	EE 1968-4	1968-12-1
	EE 68-7A	A	1968-12-1	EE 1968-4	1968-12-1
	EE 68-7B	AL	1968-12-1	EE 1968-4	1968-12-1
	EE 68-7C	AL	1968-12-1	EE 1968-4	1968-12-1
	EE 68-7D	A	1968-12-1	EE 1968-4	1968-12-1
	EE 68-7E	AL	1968-12-1	EE 1968-4	1968-12-1
	EE 68-7F	A	1968-12-1	EE 1968-4	1968-12-1
	EE 68-7G	AL	1968-12-1	EE 1968-4	1968-12-1
	EE 68-7H	A	1968-12-1	EE 1968-4	1968-12-1
	EE 68-7I	AL	1968-12-1	EE 1968-4	1968-12-1
	EE 68-7J	A	1968-12-1	EE 1968-4	1968-12-1
	EE 68-7K	AL	1968-12-1	EE 1968-4	1968-12-1
	EE 68-7L	A	1968-12-1	EE 1968-4	1968-12-1
	EE 68-7M	AL	1968-12-1	EE 1968-4	1968-12-1
	EE 68-7N	A	1968-12-1	EE 1968-4	1968-12-1
	EE 68-7O	AL	1968-12-1	EE 1968-4	1968-12-1
	EE 68-7P	A	1968-12-1	EE 1968-4	1968-12-1
	EE 68-7Q	AL	1968-12-1	EE 1968-4	1968-12-1
	EE 68-7R	A	1968-12-1	EE 1968-4	1968-12-1
	EE 68-7S	AL	1968-12-1	EE 1968-4	1968-12-1
	EE 68-7T	A	1968-12-1	EE 1968-4	1968-12-1
	EE 68-7U	AL	1968-12-1	EE 1968-4	1968-12-1
	EE 68-7V	A	1968-12-1	EE 1968-4	1968-12-1
	EE 68-7W	AL	1968-12-1	EE 1968-4	1968-12-1
	EE 68-7X	A	1968-12-1	EE 1968-4	1968-12-1
	EE 68-7Y	AL	1968-12-1	EE 1968-4	1968-12-1
	EE 68-7Z	A	1968-12-1	EE 1968-4	1968-12-1

AB Arabinan materials comprise cross-linked polysaccharides. Thus, 20 g of arabin xymethyl was dissolved in 2 L of 0.1 M phosphate water, then 2.5 g of 1% soln. of aluminum sodium lactate was added thereto and the mixt. was then dried. The absorption regarding 1% powder was 4-5 ml.

[illegible]

	PATENT NO.	FIG.	DATE	APPLICATION NO.	FILE
1	2,611,751	A1	1954-11-15	36-173,411	1954-11-15

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C O I

The framing agents have general formula $R_1OCH_2CH(R_2)CH_2R_3$ where R_1 = straight or branched chain, R_2 = 1- α -alkyl, R_3 = 2- α -alkyl, R_4 = 1- α -alkyl, R_5 = 2- α -alkyl, R_6 = 3- α -alkyl, R_7 = 4- α -alkyl, R_8 = 5- α -alkyl, R_9 = 6- α -alkyl, R_{10} = 7- α -alkyl, R_{11} = 8- α -alkyl, R_{12} = 9- α -alkyl, R_{13} = 10- α -alkyl, R_{14} = 11- α -alkyl, R_{15} = 12- α -alkyl, R_{16} = 13- α -alkyl, R_{17} = 14- α -alkyl, R_{18} = 15- α -alkyl, R_{19} = 16- α -alkyl, R_{20} = 17- α -alkyl, R_{21} = 18- α -alkyl, R_{22} = 19- α -alkyl, R_{23} = 20- α -alkyl, R_{24} = 21- α -alkyl, R_{25} = 22- α -alkyl, R_{26} = 23- α -alkyl, R_{27} = 24- α -alkyl, R_{28} = 25- α -alkyl, R_{29} = 26- α -alkyl, R_{30} = 27- α -alkyl, R_{31} = 28- α -alkyl, R_{32} = 29- α -alkyl, R_{33} = 30- α -alkyl, R_{34} = 31- α -alkyl, R_{35} = 32- α -alkyl, R_{36} = 33- α -alkyl, R_{37} = 34- α -alkyl, R_{38} = 35- α -alkyl, R_{39} = 36- α -alkyl, R_{40} = 37- α -alkyl, R_{41} = 38- α -alkyl, R_{42} = 39- α -alkyl, R_{43} = 40- α -alkyl, R_{44} = 41- α -alkyl, R_{45} = 42- α -alkyl, R_{46} = 43- α -alkyl, R_{47} = 44- α -alkyl, R_{48} = 45- α -alkyl, R_{49} = 46- α -alkyl, R_{50} = 47- α -alkyl, R_{51} = 48- α -alkyl, R_{52} = 49- α -alkyl, R_{53} = 50- α -alkyl, R_{54} = 51- α -alkyl, R_{55} = 52- α -alkyl, R_{56} = 53- α -alkyl, R_{57} = 54- α -alkyl, R_{58} = 55- α -alkyl, R_{59} = 56- α -alkyl, R_{60} = 57- α -alkyl, R_{61} = 58- α -alkyl, R_{62} = 59- α -alkyl, R_{63} = 60- α -alkyl, R_{64} = 61- α -alkyl, R_{65} = 62- α -alkyl, R_{66} = 63- α -alkyl, R_{67} = 64- α -alkyl, R_{68} = 65- α -alkyl, R_{69} = 66- α -alkyl, R_{70} = 67- α -alkyl, R_{71} = 68- α -alkyl, R_{72} = 69- α -alkyl, R_{73} = 70- α -alkyl, R_{74} = 71- α -alkyl, R_{75} = 72- α -alkyl, R_{76} = 73- α -alkyl, R_{77} = 74- α -alkyl, R_{78} = 75- α -alkyl, R_{79} = 76- α -alkyl, R_{80} = 77- α -alkyl, R_{81} = 78- α -alkyl, R_{82} = 79- α -alkyl, R_{83} = 80- α -alkyl, R_{84} = 81- α -alkyl, R_{85} = 82- α -alkyl, R_{86} = 83- α -alkyl, R_{87} = 84- α -alkyl, R_{88} = 85- α -alkyl, R_{89} = 86- α -alkyl, R_{90} = 87- α -alkyl, R_{91} = 88- α -alkyl, R_{92} = 89- α -alkyl, R_{93} = 90- α -alkyl, R_{94} = 91- α -alkyl, R_{95} = 92- α -alkyl, R_{96} = 93- α -alkyl, R_{97} = 94- α -alkyl, R_{98} = 95- α -alkyl, R_{99} = 96- α -alkyl, R_{100} = 97- α -alkyl, R_{101} = 98- α -alkyl, R_{102} = 99- α -alkyl, R_{103} = 100- α -alkyl, R_{104} = 101- α -alkyl, R_{105} = 102- α -alkyl, R_{106} = 103- α -alkyl, R_{107} = 104- α -alkyl, R_{108} = 105- α -alkyl, R_{109} = 106- α -alkyl, R_{110} = 107- α -alkyl, R_{111} = 108- α -alkyl, R_{112} = 109- α -alkyl, R_{113} = 110- α -alkyl, R_{114} = 111- α -alkyl, R_{115} = 112- α -alkyl, R_{116} = 113- α -alkyl, R_{117} = 114- α -alkyl, R_{118} = 115- α -alkyl, R_{119} = 116- α -alkyl, R_{120} = 117- α -alkyl, R_{121} = 118- α -alkyl, R_{122} = 119- α -alkyl, R_{123} = 120- α -alkyl, R_{124} = 121- α -alkyl, R_{125} = 122- α -alkyl, R_{126} = 123- α -alkyl, R_{127} = 124- α -alkyl, R_{128} = 125- α -alkyl, R_{129} = 126- α -alkyl, R_{130} = 127- α -alkyl, R_{131} = 128- α -alkyl, R_{132} = 129- α -alkyl, R_{133} = 130- α -alkyl, R_{134} = 131- α -alkyl, R_{135} = 132- α -alkyl, R_{136} = 133- α -alkyl, R_{137} = 134- α -alkyl, R_{138} = 135- α -alkyl, R_{139} = 136- α -alkyl, R_{140} = 137- α -alkyl, R_{141} = 138- α -alkyl, R_{142} = 139- α -alkyl, R_{143} = 140- α -alkyl, R_{144} = 141- α -alkyl, R_{145} = 142- α -alkyl, R_{146} = 143- α -alkyl, R_{147} = 144- α -alkyl, R_{148} = 145- α -alkyl, R_{149} = 146- α -alkyl, R_{150} = 147- α -alkyl, R_{151} = 148- α -alkyl, R_{152} = 149- α -alkyl, R_{153} = 150- α -alkyl, R_{154} = 151- α -alkyl, R_{155} = 152- α -alkyl, R_{156} = 153- α -alkyl, R_{157} = 154- α -alkyl, R_{158} = 155- α -alkyl, R_{159} = 156- α -alkyl, R_{160} = 157- α -alkyl, R_{161} = 158- α -alkyl, R_{162} = 159- α -alkyl, R_{163} = 160- α -alkyl, R_{164} = 161- α -alkyl, R_{165} = 162- α -alkyl, <

$$x = \frac{1}{2} \left(\frac{1}{2} + \frac{1}{2} \right) = \frac{1}{2}$$

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11. The following is a partial listing of the names of the persons who were interviewed for the purpose of this report:

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U.S. Dept. of Agriculture, Eastern Regional Res. Serv., 101 University, St., College,

...and the fact that the *Journal* is a journal of the American Psychological Association, the largest and most prestigious of the psychological organizations in the United States, is a source of great pride and honor for me.

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Figure 1 is a schematic representation of the experimental design. It shows a sequence of events: a subject is presented with a stimulus (a face), then a response is recorded (a button press), and finally a feedback is provided (a light or sound). The sequence is repeated for multiple trials.

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polysaccharide

polysaccharide gellan H₂ were prepd. The salts were 1:1 or 1:2. In water at room temp. 15-18-deg. . The spinning solution generally held that content of 1:1 degree, was 10-20%, for 1:2, 5-10%. Complete gelling in the presence of a divalent cation was obtained. In 1:1, 1:2, and, the 1:2 salt was firm gels. These conclusions were based on the properties appeared and confirmed by the presence of a divalent cation. The gels had low compressive strength. Gellan H₂ at levels 10-20%, 1:1 and 1:2 for a content of 1:1 with over one-third of the 1:2 carboxyl groups. Purification was rapid and included sequential treatments with a cation-exchange H⁺ resin, LiOH, NaOH, HCl, or NH₄ H, and an anion-exchange Cl⁻ resin. About 95% of the divalent cations and nearly 100% of the phosphate that contaminated com. I were removed. The purified monovalent salts of gellan set in the presence of a divalent cation and provide well-defined agents for gelation media used in the preparation of gels and plants. In a manner analogous to Na alginate, a low level of Li, Na, K, or NH₄ gellanate formed beads that slipped into vials. If divalent cations. This property was suggested for enrichment of enzymes and cells in beads.

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DATE OF BIRTH: 08/06/1970

1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 26

1. *Journal of the American Medical Association*, 1997; 277: 1033-1038.

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10. *Journal of the American Medical Association*, 2000; 284: 1039-1044.

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	PATENT NO.	KIND	DATE	APPLICATION NO.	A.I.C.
1	1511444	A	1994-04	75-1044-19-2	4/11/94
2	1511444	B	1995-04-07		

the esterified 2-10% sorbicide. 2-10% sorbicide 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836,

	PATENT NO.	KIND	DATE	AFFILIATION NO.	AGE
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11	WO 94-0684	A1	1994-01-17	WO 1994-06119	1994-01-17
	WI: AD, CA, JP, US				
	ARI: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, NL, PT, SE				
	AP: 47-10	A1	1995-03-04	AD 1994-7-17	1994-01-16
	BE: 1-40	A1	1996-04-04	EE 1994-0404	1994-01-16
	FI: AD, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, NL, PT, SE				
12A1	EP 1000-1	B1	1994-11-16		
	W: 1994-06119		1994-01-16		
AB	A protein stabilizer additive comprises two or more components consisting of the formula: (HOCH ₂) _n -S-R, wherein R is: C1-C4 alkyl; a substituted C1-C4 alkyl; HNR ₂ ; NR ₂ R; wherein R1 and R2 may be independently H, C1-C4 alkyl sulfonate, C1-C4 hydroxyalkyl sulfonate; C1-C4 alkyl S-(CH ₂) _m -OHCH ₂ , C1-C4 alkyl, C1-C4 hydroxyalkyl; C1-C4 alkyl carboxylate; a polyelectrolyte; a buffer, and one or more additional compounds for example divalent metal salts. An example of the (HOCH ₂) _n -S-R compound is 1,1,1'-tris(hydroxymethyl)ethane. An example of the polyelectrolyte is alginate acid. The stabilization of protein enzymes such as lactate oxidase and aldol oxidase are described.				

	PATENT NO.	KIND	DATE	APPLICATION NO.	FILE
11	BE 613811	A1	1994-1-11	BE 1994-4-11	1994-1-11
	BE 613811	A1	1994-1-11		
	BE: A1, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, JP, NL, PT, SE				
	FR 94-1419	A	1994-1-11	FR 1994-4-19	1994-1-11
	AT 448814	A1	1994-1-13	AT 1994-85-14	1994-1-13
	AT 448814	B1	1995-1-12		
	CA 94-1819	A	1995-8-10	CA 1994-819	1994-1-11
	US 6110411	A1	1994-1-14	US 1994-111041	1994-1-14
	US 6110411	A1	1995-1-16	US 1994-35-41	1994-1-14
	FR 6110411	B1	1999-1-14	FR 1994-3-41	1994-1-14
	FR 6110411	A	1994-1-14	FR 1994-11-41	1994-1-14
	US 6110411	A	1995-8-10	US 1994-11-41	1994-1-14

AB Diabetic (non-dependent) diabetes mellitus is treated with insulin. Insulin may be prolonged administration of peptide "D" of incretin-like peptide 1 (insulintropin, HPI-1) and related peptides, esp. in combination with a polymer matrix, in a water-insoluble oil suspension, in a complex with a polymer matrix, in a complex with a basic polypeptide (phenyllaurylamine), in a liposome delivery system, or after conjugation to a carrier molecule in an injectable material formation (e.g. high shear extrusion, emulsions) to prolong the release of the peptide. Thus, a solution of 10 mg insulintropin/ml phosphate-buffered saline (PBS) was mixed with an equal vol. of a solution of 0.6 mg protamine and 4.4 mg HPI-1 in PBS to produce an oil suspension.

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2. J. E. H. REE, *Trans. Faraday Soc.*, **46**, 26 (1950).

Figure 1. A schematic diagram of the experimental design. The subjects were divided into two groups: the control group and the experimental group. The control group received a standard 12-week training program, while the experimental group received a modified 12-week training program. The modified program included a 4-week pre-training period followed by an 8-week training period. The subjects were then divided into two subgroups: the control subgroup and the experimental subgroup. The control subgroup received a standard 12-week training program, while the experimental subgroup received a modified 12-week training program. The subjects were then divided into two subgroups: the control subgroup and the experimental subgroup. The control subgroup received a standard 12-week training program, while the experimental subgroup received a modified 12-week training program.

2.1.1. *Experiments*

References

1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 2679, 26

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1. $\frac{1}{2} \times \frac{1}{2} = \frac{1}{4}$ 2. $\frac{1}{2} \times \frac{1}{4} = \frac{1}{8}$ 3. $\frac{1}{4} \times \frac{1}{4} = \frac{1}{16}$ 4. $\frac{1}{2} \times \frac{1}{8} = \frac{1}{16}$

Micro-injector particles having poly-electrolyte groups on their surface are used for immuno assay to reduce non-specific interaction. The surface polyelectrolyte can be selected from anionic, cationic, zwitterionic, phosphonic, etc. functional prop-grp. polyelectrolyte or combinations of anionic, cationic, ammonium, etc. functional prop-grp. polyelectrolyte. In example, different combination of anionic and cationic polyelectrolyte were used as carrier for immunoassay of α -fetoprotein or α -fetoprotein-antithymotrypsin.

	PATENT NO.	KIND	DATE	APPLICATION NO.	FILED
11	111-1	A1	1993-1-14	WD 1993-1-14	1993-1-14
	111-2	A1	1993-1-14	WD 1993-1-14	1993-1-14
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	111-4	A1	1993-1-14	WD 1993-1-14	1993-1-14
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	111-6	A1	1993-1-14	WD 1993-1-14	1993-1-14
	111-7	A1	1993-1-14	WD 1993-1-14	1993-1-14
	111-8	A1	1993-1-14	WD 1993-1-14	1993-1-14
	111-9	A1	1993-1-14	WD 1993-1-14	1993-1-14
	111-10	A1	1993-1-14	WD 1993-1-14	1993-1-14
	111-11	A1	1993-1-14	WD 1993-1-14	1993-1-14
	111-12	A1	1993-1-14	WD 1993-1-14	1993-1-14
	111-13	A1	1993-1-14	WD 1993-1-14	1993-1-14
	111-14	A1	1993-1-14	WD 1993-1-14	1993-1-14
	111-15	A1	1993-1-14	WD 1993-1-14	1993-1-14
	111-16	A1	1993-1-14	WD 1993-1-14	1993-1-14
	111-17	A1	1993-1-14	WD 1993-1-14	1993-1-14
	111-18	A1	1993-1-14	WD 1993-1-14	1993-1-14
	111-19	A1	1993-1-14	WD 1993-1-14	1993-1-14
	111-20	A1	1993-1-14	WD 1993-1-14	1993-1-14
	111-21	A1	1993-1-14	WD 1993-1-14	1993-1-14
	111-22	A1	1993-1-14	WD 1993-1-14	1993-1-14
	111-23	A1	1993-1-14	WD 1993-1-14	1993-1-14
	111-24	A1	1993-1-14	WD 1993-1-14	1993-1-14
	111-25	A1	1993-1-14	WD 1993-1-14	1993-1-14
	111-26	A1	1993-1-14	WD 1993-1-14	1993-1-14
	111-27	A1	1993-1-14	WD 1993-1-14	1993-1-14
	111-28	A1	1993-1-14	WD 1993-1-14	1993-1-14
	111-29	A1	1993-1-14	WD 1993-1-14	1993-1-14
	111-30	A1	1993-1-14	WD 1993-1-14	1993-1-14
	111-31	A1	1993-1-14	WD 1993-1-14	1993-1-14
	111-32	A1	1993-1-14	WD 1993-1-14	1993-1-14
	111-33	A1	1993-1-14	WD 1993-1-14	1993-1-14
	111-34	A1	1993-1-14	WD 1993-1-14	1993-1-14
	111-35	A1	1993-1-14	WD 1993-1-14	1993-1-14
	111-36	A1	1993-1-14	WD 1993-1-14	1993-1-14
	111-37	A1	1993-1-14	WD 1993-1-14	1993-1-14
	111-38	A1	1993-1-14	WD 1993-1-14	1993-1-14
	111-39	A1	1993-1-14	WD 1993-1-14	1993-1-14
	111-40	A1	1993-1-14	WD 1993-1-14	1993-1-14
	111-41	A1	1993-1-14	WD 1993-1-14	1993-1-14
	111-42	A1	1993-1-14	WD 1993-1-14	1993-1-14
	111-43	A1	1993-1-14	WD 1993-1-14	1993-1-14
	111-44	A1	1993-1-14	WD 1993-1-14	1993-1-14
	111-45	A1	1993-1-14	WD 1993-1-14	1993-1-14
	111-46	A1	1993-1-14	WD 1993-1-14	1993-1-14
	111-47	A1	1993-1-14	WD 1993-1-14	1993-1-14
	111-48	A1	1993-1-14	WD 1993-1-14	1993-1-14
	111-49	A1	1993-1-14	WD 1993-1-14	1993-1-14
	111-50	A1	1993-1-14	WD 1993-1-14	1993-1-14
	111-51	A1	1993-1-14	WD 1993-1-14	1993-1-14
	111-52	A1	1993-1-14	WD 1993-1-14	

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[illegible][illegible]

	PATENT N.°	FIND	DATE	APPLICATION N.°	DATE
11	W 1944-114	A1	1944-4-1	W 1944-114-BE114	1944-114
	W1: A1, B1, B2, B3, B4, B5, B6, B7, B8, B9, B10, B11, B12, B13, B14, B15, B16, B17, B18, B19, B20, B21, B22, B23, B24, B25, B26, B27, B28, B29, B30, B31, B32, B33, B34, B35, B36, B37, B38, B39, B40, B41, B42, B43, B44, B45, B46, B47, B48, B49, B50, B51, B52, B53, B54, B55, B56, B57, B58, B59, B60, B61, B62, B63, B64, B65, B66, B67, B68, B69, B70, B71, B72, B73, B74, B75, B76, B77, B78, B79, B80, B81, B82, B83, B84, B85, B86, B87, B88, B89, B90, B91, B92, B93, B94, B95, B96, B97, B98, B99, B100, B101, B102, B103, B104, B105, B106, B107, B108, B109, B110, B111, B112, B113, B114, B115, B116, B117, B118, B119, B120, B121, B122, B123, B124, B125, B126, B127, B128, B129, B130, B131, B132, B133, B134, B135, B136, B137, B138, B139, B140, B141, B142, B143, B144, B145, B146, B147, B148, B149, B150, B151, B152, B153, B154, B155, B156, B157, B158, B159, B160, B161, B162, B163, B164, B165, B166, B167, B168, B169, B170, B171, B172, B173, B174, B175, B176, B177, B178, B179, B180, B181, B182, B183, B184, B185, B186, B187, B188, B189, B190, B191, B192, B193, B194, B195, B196, B197, B198, B199, B200, B201, B202, B203, B204, B205, B206, B207, B208, B209, B210, B211, B212, B213, B214, B215, B216, B217, B218, B219, B220, B221, B222, B223, B224, B225, B226, B227, B228, B229, B230, B231, B232, B233, B234, B235, B236, B237, B238, B239, B240, B241, B242, B243, B244, B245, B246, B247, B248, B249, B250, B251, B252, B253, B254, B255, B256, B257, B258, B259, B260, B261, B262, B263, B264, B265, B266, B267, B268, B269, B270, B271, B272, B273, B274, B275, B276, B277, B278, B279, B280, B281, B282, B283, B284, B285, B286, B287, B288, B289, B290, B291, B292, B293, B294, B295, B296, B297, B298, B299, B300, B301, B302, B303, B304, B305, B306, B307, B308, B309, B310, B311, B312, B313, B314, B315, B316, B317, B318, B319, B320, B321, B322, B323, B324, B325, B326, B327, B328, B329, B330, B331, B332, B333, B334, B335, B336, B337, B338, B339, B340, B341, B342, B343, B344, B345, B346, B347, B348, B349, B350, B351, B352, B353, B354, B355, B356, B357, B358, B359, B360, B361, B362, B363, B364, B365, B366, B367, B368, B369, B370, B371, B372, B373, B374, B375, B376, B377, B378, B379, B380, B381, B382, B383, B384, B385, B386, B387, B388, B389, B390, B391, B392, B393, B394, B395, B396, B397, B398, B399, B400, B401, B402, B403, B404, B405, B406, B407, B408, B409, B410, B411, B412, B413, B414, B415, B416, B417, B418, B419, B420, B421, B422, B423, B424, B425, B426, B427, B428, B429, B430, B431, B432, B433, B434, B435, B436, B437, B438, B439, B440, B441, B442, B443, B444, B445, B446, B447, B448, B449, B450, B451, B452, B453, B454, B455, B456, B457, B458, B459, B460, B461, B462, B463, B464, B465, B466, B467, B468, B469, B470, B471, B472, B473, B474, B475, B476, B477, B478, B479, B480, B481, B482, B483, B484, B485, B486, B487, B488, B489, B490, B491, B492, B493, B494, B495, B496, B497, B498, B499, B500, B501, B502, B503, B504, B505, B506, B507, B508, B509, B510, B511, B512, B513, B514, B515, B516, B517, B518, B519, B520, B521, B522, B523, B524, B525, B526, B527, B528, B529, B530, B531, B532, B533, B534, B535, B536, B537, B538, B539, B540, B541, B542, B543, B544, B545, B546, B547, B548, B549, B550, B551, B552, B553, B554, B555, B556, B557, B558, B559, B560, B561, B562, B563, B564, B565, B566, B567, B568, B569, B570, B571, B572, B573, B574, B575, B576, B577, B578, B579, B580, B581, B582, B583, B584, B585, B586, B587, B588, B589, B590, B591, B592, B593, B594, B595, B596, B597, B598, B599, B600, B601, B602, B603, B604, B605, B606, B607, B608, B609, B610, B611, B612, B613, B614, B615, B616, B617, B618, B619, B620, B621, B622, B623, B624, B625, B626, B627, B628, B629, B630, B631, B632, B633, B634, B635, B636, B637, B638, B639, B640, B641, B642, B643, B644, B645, B646, B647, B648, B649, B650, B651, B652, B653, B654, B655, B656, B657, B658, B659, B660, B661, B662, B663, B664, B665, B666, B667, B668, B669, B670, B671, B672, B673, B674, B675, B676, B677, B678, B679, B680, B681, B682, B683, B684, B685, B686, B687, B688, B689, B690, B691, B692, B693, B694, B695, B696, B697, B698, B699, B700, B701, B702, B703, B704, B705, B706, B707, B708, B709, B710, B711, B712, B713, B714, B715, B716, B717, B718, B719, B720, B721, B722, B723, B724, B725, B726, B727, B728, B729, B730, B731, B732, B733, B734, B735, B736, B737, B738, B739, B740, B741, B742, B743, B744, B745, B746, B747, B748, B749, B750, B751, B752, B753, B754, B755, B756, B757, B758, B759, B760, B761, B762, B763, B764, B765, B766, B767, B768, B769, B770, B771, B772, B773, B774, B775, B776, B777, B778, B779, B780, B781, B782, B783, B784, B785, B786, B787, B788, B789, B790, B791, B792, B793, B794, B795, B796, B797, B798, B799, B800, B801, B802, B803, B804, B805, B806, B807, B808, B809, B				

AB **Online esters of acidic polysaccharides**, such as hyaluronic acid, **alginate** acid, and CM cellulose, are effective mucosal irritants and gastroprotective agents. **Alginic acid online ester** It was orally administered to rats for 14 days before ingesting; gastroprotective activity of $100 \mu\text{g/kg}$ was dependent and its efficacy was greater than that of sulfonate. $100 \mu\text{g/kg}$ was mixed with water before use comprised granules contg. 14%, 20%, 25% and Na TMC 48, cellulose 10, talc 3, aspartame 2, flavor 1, and sucrose to 45%.

$$\frac{1}{\sqrt{\pi}} \int_{-\infty}^{\infty} f(x) e^{-x^2} dx = \frac{1}{\sqrt{\pi}} \int_{-\infty}^{\infty} f(x) e^{-x^2} dx$$
[illegible]

NAME	IDENTIFICATION	PHONE	DATE	APPLICATION NO.	AGE
11	EE 41774	AL	1991-11-14	EE 1991-3-456	1
	EE 41774	AL	1991-11-14		
	EE 41774	EL	1991-11-17		
	EE 41774, EE, CH, DE, DN, ES, FR, GE, GR, IT, LL, L, N, SE				
	EE 41774	A	1991-11-14	US 1991-55111	1
	AT 11774	E	1991-11-14	AT 1991-3-456	1
	AA 11774	AA	1991-11-14	AA 1991-1-114	1
	AL 11774	AL	1991-11-17	AL 1991-6-16	1
	EL 11774	EL	1991-11-17		
	EE 149999	A	1991-11-17	ON 1991-1-114	1
	EE 141114	AL	1991-6-17	SE 1991-1-11	1
	EE 13456	A	1991-6-17	EE 1991-3-456	1
FRAT	US 1991-3-456	1991-6-17			
	US 1991-55111	1991-11-16			

44 Dispersed is a unique vehicle system which provides a suitable inert, to promote formulated therewith, enhanced dispersion of actives therein, and improved deposition of actives therefrom. This vehicle system comprises a primary thickening agent which is a nonionic long-chain alkyolated water-sol. polymer, and a secondary thickening agent which is a water-sol. surfactant, dispersed in a compatible solvent. Optionally, the vehicle system may include a wetting agent which is a water-sol. surfactant. Also, optionally, a dispersing aid, which is a water-sol. polymer of either cationic or anionic character may be included in the vehicle system.

- | PATENT NO. | PINO | DATE | APPLICATION NO. | APP. |
|------------|------|------|-----------------|------|
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AP A maleic anhydride (II) polymer is **esterified** with 1.1 g (1.1 g) (1.0) II and 0.1 g polysaccharide to convert 1.0% of the carboxy groups to **ester** groups, the remainder being free as free acid, salt, and/or amide groups. The **esterification** product is useful as an absorbent for water, blood, urine, etc. A polymer was prepd. from 0.1 g I and 0.1 g Me vinyl ether and **esterified** 1.0 g (1.0 g) ap. with 0.1 g II. Me vinyl ether in the presence of NaOH, giving an absorbent which had 10% of carboxy groups **esterified** and absorbed 4.4 g H₂O and 4.0 g Me vinyl ether. 0.1 g II.

Figure 1. The effect of the concentration of the *Agrobacterium* suspension on the transformation efficiency of *Agrobacterium* strains.

01 AMNH 4-19-68 READING UNIVERSITY ACT
02 100-44707-10000
03 111111
04 In response to telephone call from United States Department of Agriculture
05 ammonium sulphate and nitrate nitrogen-containing fertilizer
06 McDowell, James A.; Stenwald, Richard E.
07 Berlin, Ind., USA
08 1967 - 1968
09 INDEX: TSSXAM
10 Filed
11 Berlin
12 Berlin
13 100-44707

[illegible]

$$\frac{1}{2} \frac{1}{2} \frac{1}{2} \quad \frac{1}{2} \frac{1}{2} \frac{1}{2} \quad \frac{1}{2} \frac{1}{2} \frac{1}{2} \quad \frac{1}{2} \frac{1}{2} \frac{1}{2}$$

- [illegible]

[illegible]

AB Stable nonap. fire-suppressing comphs. are prepd. by the copolymer-
linking typically called lip. 3-7, a carboxy polymer and an agent
-NH₂, and an NH₄ salt 3-7. The polymer is a polyacryl
polymer, **polysaccharide**, polyacrylamide, or a synthetic resin
having pendant free **carboxyl** groups or functional groups
converted to the free acid in a different form. The addition of the
copolymer lip. The comphs. contain a strong fire-retardant
material functional at low temps. as well as fire-retardant powders and
pressurizing gases. Thus, a comph. comprising NH₄ 3-7, 3-7, 3-7, 3-7, 3-7,
4-8, CBrF₃ 44.1, and CBrF₃ 11.0% required 116 g of water to extinguish a 5-ft²
naphene fire in a std. test.

[illegible]

AP - In the sealing of holes in hoses, pipes, wires, etc., a layer of lig.
-type composite **ester** is applied over the hole and cured with
light. If a hole containing IR and CRH is to be sealed in an
automobile radiator hose was covered with a layer of - type composite
Super-Bond and then with a layer of dental **alginate**. After 18
operation of the automobile under normal conditions, water temp.
110 degree, the hose was still performing satisfactorily.

1964, 1965, 1966

1. KOWALSKI, J. P. (1964) "KOWALSKI, J. P. AND

2. KOWALSKI, J. P. (1965)

3. KOWALSKI, J. P. (1966)

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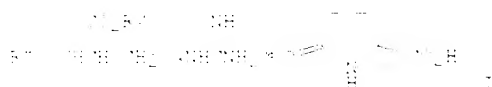
80. KOWALSKI, J. P. (2047)

81. KOWALSKI, J. P. (2048)

82. KOWALSKI, J. P. (2049)

83. KOWALSKI, J. P. (2050)

- | | PATENT NO. | FIG. | DATE | APPLICATION NO. | A. B. |
|----|-------------|------|------------|-----------------|-----------|
| 1) | DE 6,12,044 | A1 | 1974.12.12 | DE 2,483,341 | 1975.4.27 |
| 2) | DE 6,12,044 | B4 | 1975.6.18 | | |



- AA Hail preps. that produce luster and elasticity in hair contain **polysaccharides**, cationic surfactants, and high molecular wt. The **polysaccharides** are hyaluronic acid [19-4-61-3], chondroitin-sulfuric acid [19-67-2-7], **alginate** acids [19-8-32-7], and alkyne glycol **alginates**, and the cationic surfactants are selected from (1) (NR1R2R3R4)+ X1- (R1, R2, R3, R4 = C1-12 alkyl, C1-12 hydroxyalkyl, C1-3 alkyl, C1-3 hydroxyalkyl, C1-3 alkyl; X1 = halogen, Me sulfates, or Et sulfates), (2) (NR5R6R7)+ X2- (R5, R6, R7 = C1-12 alkyl, Me, Et, or hydroxyethyl; X2 = Cl-, Br-, I-, Me sulfates, or Et sulfates), and (3) R8- X3- (R8 = C1-12 alkyl; X3 = C1-12 alkyl). Thus, a prep. comprises hyaluronic acid or chondroitin-sulfates, 1.5-10% w/w, **stearyltrimethylammonium chloride** (11-1-11-1), 0.5-10% w/w, of cetyl alc. (16-61-11-4) and stearyl alc. (11-1-11-1) 1:1-5:1, polyoxyethylene-stearyl ether (18, propylene glycol 18, and HLB of 10 + 10) 1:1.

Re: 11: 11, 12, 13, 14-11, 16, 17, 39-41

10. ANSWER 6 OF 45 USPATFULL

AN 1000:114-11 USPATFULL

TI App. of viscoelastic surfactant solutions for the treatment of hair and skin
 IN Bader, Dieter, Herten, Germany, Federal Republic of
 BA Bader, Dieter, Herten, Germany, Federal Republic of Germany

FI 1000:114-11

FI 1000:114-11

FI 1000:114-11

FI 1000:114-11

FI 1000:114-11

FI 1000:114-11

EXAM Primary Examiner: Gupta, Yashendra; Assistant Examiner: Gade, Vikar R.
 1000:114-11

1000:114-11

1000:114-11

1000:114-11

1000:114-11

1000:114-11

AB App. of viscoelastic surfactant solutions for the treatment of hair and skin which contain:

A. from 4 to 25% by weight of an anionic surfactant;

B. from 1 to 10% by weight of a cationic surfactant;

C. from 1 to 10% by weight of a nonionic surfactant;

D. from 1 to 6% by weight of an electrolyte;

E. from 1 to 5% by weight of a water-soluble polymer; and

F. from 1 to 5% by weight of a further constituent in which the sum of the amounts of A, B, and C is at least 1% by weight and the sum of the amounts of D, E, and F is between 1 and 10% by weight, in each case based on the total weight of the aqueous solution, and having a shear modulus, G', between 5 and 50 Pa at temperatures between 20 and 40 degree C. and a pH of from 4 to 8, and in which the conditions for the identity of the storage modulus, G', and the loss modulus, G'', are in the angular frequency range from 0.1 and 60 rad.s⁻¹, exhibit optimum flow behavior for the intended applications.

10. INDEXING IS AVAILABLE FOR THIS PATENT.

11. ANSWER 11 OF 45 USPATFULL

AN 1000:4398 USPATFULL

TI Preparation of lactams from **aliphatic** alpha,omega-dinitriles

IN Di Cosimo, Robert, Rockland, DE, United States

IN Fallon, Robert Donald, Elston, MD, United States

IN Severan, John Edward, Wilmington, DE, United States

IN Herkes, Frank Edward, Wilmington, DE, United States

BA E. I. du Pont de Nemours and Company, Wilmington, DE, United States

FI 1000:4398

FI 1000:4398

FI 1000:4398

EXAM Primary Examiner: Lilling, Herbert J.

1000:4398

1000:4398

1000:4398

1000:4398

1000:4398

AB A process for the preparation of five-membered lactams prepared from lactams from **aliphatic** alpha,omega-dinitriles, and from **aliphatic** alpha,omega-dinitriles.

[illegible][illegible]

1 ANSWER 1. F-4 USPATFULL
AN 1986-127003 USPATFULL
TI Non-woven fabric material comprising ester-crosslinker and aluminum acid
polymerase
IN 1. Salsatti, Eusebio, Via Salsattini 12, at 18 Davis, Italy
Salsatti, Lanfranco, Via Salmi, 35, 35 - Ponte di Legno, Bad Va,
Italy
Aves, Aurelio, Viale Ippocrate, 31, 10121 Rome, Italy
FI US 444386 1981-12
RI US 1988-4-74 7 1988-6-2 (4)
ALL Continuation-in-part of Ser. No. US 1991-PD700, filed on 14 Dec 1990,
now patented, Pat. No. US 5500916
PADI IT 1991-PD839 19911215
DT Quality
EXAM Primary Examiner: Wekman, Edward J.
LAW Brock, Stewart, Milason & Birch, LLP
CLM Number of Claims: 1
EWM Exemplary Claim: 1
DSN 1 Drawing Figure(s) : 1 Drawing Page(s)
LN 1/1

[illegible]

AB Biomaterials are disclosed comprised of biodegradable, biocompatible, and biabsorbable non-woven fabric materials for use in **surgery** for the guided regeneration of tissues. The non-woven fabric materials constitute threads embedded in a matrix, wherein the matrix and the threads constitute auto-crosslinked hyaluronic acid.

NO INTEREST IS AVAILABLE FOR THIS PATENT.

DT: ANSWER 14 OF 45 USEPATFULL
 AN: 1996:6-94 USEPATFULL
 TI: Coated papers
 IN: Malhotra, Shadi L., Mississauga, Canada
 RA: Xerox Corporation, Stamford, CT, United States W.S. Corporation
 FI: US 57 00766 1996-11
 AI: 1996-0556-14 1996 6 1 94
 CL: G01N 3/30
 RA AD: Primary Examiner: Schwartz, David R.
 LEAD: Feltz, R. L.
 INVT: Number: 5 Claims 1-5
 FLD: Exemplary Claim: 1
 INVT: No Drawings
 INVT: 1/1

7. REFERENCES TO AVAILABLE FOR THIS PATENT

AB Disclosed is a coated paper which comprises a substrate; on a top portion thereof a layer comprised of a water-soluble emulsion and a water-insoluble stable emulsion, said layer being a further layer formed on one side of the substrate; and a further layer formed on the other side of the substrate; the further layer formed on the other side of the substrate being a water-soluble emulsion, said water-soluble emulsion being water-soluble in water, and the further layer formed on the other side of the substrate being a water-soluble emulsion.

[illegible]

1. *Chlorophyll a* and *Chlorophyll b* were determined by the method of Lichtenthaler and Sponholz (1980).

[illegible]

NO COPIES AVAILABLE FOR THIS REPORT.

4b Inter and/or intramolecular cross-linked esters of acid polysaccharides
are disclosed in which a part or all of the carboxyl groups are
esterified with hydroxyl groups of the same molecule and/or of different
molecules of the acid polysaccharide. These inter- or cross-linked esters of
polysaccharide acids are useful in the field of absorbable plastic
materials, to manufacture sanitary and **surgical** articles, in
the dental and pharmaceutical fields, in the food industry and in many
other industrial fields.

ALL INFORMATION CONTAINED HEREIN IS UNCLASSIFIED FOR THE REASON

01: ANSWER 16 OF 48 USPATFULL
 AN: 1645 USPATFULL
 TI: Invisite membranes for the guided regeneration of tissues
 IN: Dragattini, Franco, Davis, Italy
 Collegari, Lanfranco, Forte di Brenta, Italy
 Rome, Azzurra, Rome, Italy
 EA: Multist. Ital. Ministry for Universities and Scientific and
 Technological Research, Rome, Italy non-U.S. & non-
 01: 01/01/80 1645 422
 AI: 01/01/80-01/01/80 1645-1645
 1645: 01/01/80-01/01/80 1645-1645
 IT: Italy
 PMA: Primary Examiner: Worman, Edward C.
 1645: Brown, Vincent, Milbach & Brown, LLP
 1645: Number of Claims: 10
 01: Exemplary Claims: 1
 1645: Drawing Sheets: 5 ; 5 Drawing Pages
 01: 1645

^a The number of subjects who were included in each group was determined by the number of subjects who completed the study. The number of subjects who were excluded from each group was determined by the number of subjects who did not complete the study.

AB Bi materials are used as comprised of nitrocellulose, polypropylene,
and nitro-cellulose composite membranes for use in surgery for
the limited penetration of tissues. The composite material are
composed of nitrocellulose embedded in a matrix, where the matrix and
the nitro-cellulose composite material is applied to the tissue, used during
the surgical procedure. The nitro-cellulose composite material will

Abstract: **alginic acid** and other polymers.

NO INDEXING IS AVAILABLE FOR THIS PATENT.

1. ANSWER 17 OF 40. USPATFULL
 2. 36487-1 USPATFULL
 3. In order to the purification of hyaluronic acid, a fraction of pure hyaluronic acid is obtained by:
 4. Fatti, Angelo, Rome, Italy
 5. Fatti, Angelo, Rome, Italy
 6. Fatti, Angelo, Rome, Italy
 7. Fatti, Angelo, Rome, Italy
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 39. Fatti, Angelo, Rome, Italy
 40. Fatti, Angelo, Rome, Italy

NO INDEXING IS AVAILABLE FOR THIS PATENT.

AB A highly pure fraction of hyaluronic acid is disclosed which is non-inflammatory and avoids post-operative complications in ocular surgery. Also disclosed is a process for the preparation of hyaluronic acid characterized by converting hyaluronic acid into a corresponding primary ammonium salt and, following purification procedures, reconverts the primary ammonium salt into a pure salt of hyaluronic acid.

NO INDEXING IS AVAILABLE FOR THIS PATENT.

1. ANSWER 17 OF 40. USPATFULL
 2. 36487-1 USPATFULL
 3. Non-woven fabric material comprising hyaluronic acid derivatives
 4. Carigatti, Enrico, Trento, Italy
 5. Carigatti, Enrico, Trento, Italy
 6. Carigatti, Enrico, Trento, Italy
 7. Carigatti, Enrico, Trento, Italy
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 39. Carigatti, Enrico, Trento, Italy
 40. Carigatti, Enrico, Trento, Italy

NO INDEXING IS AVAILABLE FOR THIS PATENT.

AB Biomaterials are disclosed comprised of biodegradable, biocompatible, and porous stable nonwoven fabric materials for **ocular surgery** for the guided regeneration of tissues. The nonwoven fabric materials are comprised of threads embedded in a matrix, wherein the matrix and the threads can be comprised of esters of hyaluronic acid, used singly or in combination, or esters of hyaluronic acid in combination with esters of **alginic acid** and other polymers.

NO INDEXING IS AVAILABLE FOR THIS PATENT.

1. ANSWER 17 OF 40. USPATFULL
 2. 36487-1 USPATFULL
 3. Biodegradable esters
 4. Fatti, Angelo, Rome, Italy
 5. Fatti, Angelo, Rome, Italy
 6. Fatti, Angelo, Rome, Italy
 7. Fatti, Angelo, Rome, Italy
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 40. Fatti, Angelo, Rome, Italy

[illegible]

001 ANSWER 1 OF 48 USPTATFULL
 AN 00:4:361 USPTATFULL
 TI New esters of **alginic acid**
 IN della Valle, Francesco, Padua, Italy
 Rome, Aurelio, Rome, Italy
 LA Rotta, Sig.A., Aversa Terme, Italy non-U.S. app. no. 10
 FI 70-44166 5-1968 51a
 AL 70-100166-1 10-1968 -
 IN 10-60630
 FBI Division of Ser. No. US 1961-71-441, filed in U.S. on 10-1-61, now patented,
 Ser. No. US 3064441 which is a division of Ser. No. 10-60630, filed
 on 14 Jun. 1967, now abandoned
 PRAI IT 1966-4606196 10-60630
 IT 61-1117
 EXAM: Primary Examiner: Robinson, Douglas W.; Assistant Examiner: Lee, Howard
 1961
 1961 H. W. Stewart, H. Mason & Birch
 ADMM Bureau of Claims: 1
 FC Exemplary Claims: 1
 DRAW No drawings
 INT INT 1-1-61
 196 INDEXING IS AVAILABLE FOR THIS PATENT.
 AB Partial esters of **alginic acid** and salts thereof are important bioplastic and pharmaceutical plastic materials useful in various fields including medical, **surgical**, prosthetic and foods.

AS INTENDING IS AVAILABLE FOR THIS PATENT.
 11. ANSWER L1 OF 48 USPATFULL
 12. 4-1-50 USPATFULL
 13. Entry of **alginate** 4-13
 14. Sella Valle, Fiumicino, Padova, Italy
 15. Kure, Atsugi, Kobe, Japan
 16. Sella, S.p.A., Anagni Terme, Italy non-U.S. reg. 1-1-50
 17. US 2,888,866-1964-1-5
 18. US 1,941-763,396-1941-6-1-5
 19. 1-1-50
 20. Continuation of Ser. No. US 1,941-763,396, filed 1-1-50, now
 granted
 21. 1-1-50-4-1-5 1-1-50-5-1-5
 22. 1-1-50
 23. Primary Examiner: Griffin, Edward W.
 24. Prior, Stewart, F. L. M. & Birch
 25. Matter of "Alginate"
 26. Primary Examiner
 27. 1-1-50

IN. WT 48:

WAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB: Improved partial esters of **alginic** acid which provide improved plastic and pharmaceutical qualities and are useful in various fields including medical, **surgical**, dental and food.

WAS INDEXING IS AVAILABLE FOR THIS PATENT.

IT: ANSWER 14 OF 45 USEPATFULL

AN: 31-6-15 USEPATFULL

TI: Sulfonized polysaccharide derivatives with hypoglycemic activity

IN: Sestri, Franco, Milan, Italy

SA: Stabilimento Tecnico, Liechtenstein, Italy (S.T.E. Corporation)

FI: US 3,500,000 1971.11.22

AI: US 1969-28,117 1971.11.22

RAI: Continuation of Ser. No. US 1967-14,714, filed in U.S. Pat. Off., now granted

RAAI: IT 19-75-11,711 19-711

IT: Utility

EXAM: Primary Examiner: Griffin, Ronald W.; Assistant Examiner: White, Everett

LAB: Packhurst, Wendel & Rossi

CLM: Number of Claims: 7

EPL: Exemplary Claim: 3

DRW: No Drawings

IN. WT 48:

WAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB: Sulfonated derivatives of natural polysaccharides having a polyglucoside structure with 50-5000 monomer units and one or more side chains bonded to the glucoside nucleus by a nitrogen or oxygen atom, an amide group, said side chains having one or more quaternary nitrogen atoms so that each monomer unit has a cation charge density exceeding two. The new compounds are particularly active as hypoglycemic agents.

WAS INDEXING IS AVAILABLE FOR THIS PATENT.

IT: ANSWER 17 OF 45 USEPATFULL

AN: 31-6-087 USEPATFULL

TI: Biphenyl derivative composition for nerve cell degeneration repairing or protective agent and process for preparing a phenyl derivative contained in the composition

IN: Tanaka, Tatsuyoshi, Tokushima, Japan

Jakurai, Yoji, Tokushima, Japan

Ogataki, Hiroshi, Tokushima, Japan

Hasegawa, Takashi, Tokushima, Japan

Fukuyama, Yoshiyasu, Tokushima, Japan

SA: Otsuka Pharmaceutical Company, Ltd., Tokyo, Japan (O.P. Corporation)

FI: US 3,553,549 1971.11.21

AI: US 1969-47,613 1970.02.09 (7)

RAAI: JP 1969-19,943 1970.02.08

RAI: JP 1969-19,941 1970.11.16

IT: Utility

EXAM: Primary Examiner: Gerstl, Robert

LAB: Shurue, Mitt, Dint Macpeak & Seas

CLM: Number of Claims: 16

EPL: Exemplary Claim: 1

DRW: 4 Drawing Figure 3; 4 Drawing Page 2

IN. WT 174:

WAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB: There is disclosed a biphenyl derivative of the form **Ar**STRI**** wherein **Ar.sup.1**, **Ar.sup.2**, **Ar.sup.3**, **Ar.sup.4**, **Ar.sup.5** and **Ar.sup.6** are as defined in its salt, a composition for nerve cell degeneration repairing or protective agent containing a phenyl derivative of **Ar** as defined in its salt, **Ar** as defined, and a process for preparing a phenyl derivative contained in the composition.

WAS INDEXING IS AVAILABLE FOR THIS PATENT.

IT: ANSWER 14 OF 45 USEPATFULL

AN: 31-6-15 USEPATFULL

11 Title: Novel proteases
 12 Inventors: Minami, Hiroshi, 1-14-18, Handa-cho, Miyake-gun, Miyake-shi, Japan
Yoshioka, Masahiko, Miyake-shi, Japan
Yoshida, Kenji, Miyake-shi, Japan
Yoshida, Kenji, Miyake-shi, Japan
 13 Agent: Shigeharu, Masahiko, Atsugi, Japan
 14 Inventors: Minami, Hiroshi, Miyake-shi, Japan
 15 US 4,888,448 1989-11-14
 16 US 4,888,448 1989-11-14
 17 US 4,888,448 1989-11-14
 18 US 4,888,448 1989-11-14
 19 US 4,888,448 1989-11-14
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 97 US 4,888,448 1989-11-14
 98 US 4,888,448 1989-11-14
 99 US 4,888,448 1989-11-14
 100 US 4,888,448 1989-11-14

ABSTRACT INDEXING IS AVAILABLE FOR THIS PATENT.

AB The invention discloses that the tissues of earthworms contain fibrinolytically or thrombolytically active ingredients which can be extracted and purified by a suitable sequence of extraction and purification procedures into the individual active ingredients including six novel proteases named F-O-HM-45, F-I-1-HM-44, F-II-1-HM-43, F-III-1-HM-42, F-IV-1-HM-41, and F-V-1-HM-40. The invention discloses the fractionation of the earthworm extract with an aqueous extractant gives five active fractions, the first four of which contain one of the first mentioned four proteases and the last of which contains the last mentioned two proteases. The disclosure includes a definition of the suitable purification methods for the proteases as well as the physico-chemical identification data thereof. Various thrombolytic medicament forms prepared with the novel proteases and the effective ingredient are described together with the results of the clinical tests carried out by the oral administration of the novel proteases.

ABSTRACT INDEXING IS AVAILABLE FOR THIS PATENT.

101 ANSWER 40 OF 48 USPTAFULL
 102 4488448 USPTAFULL
 103 Stabilization of thickened aqueous fluids
 104 Sargent, Lionel S., Hagerstown, MD, United States
 105 E. I. du Pont de Nemours and Company, Wilmington, DE, United States
 106 (U.S. Corporation)
 107 US 4,888,448 1989-11-14
 108 US 4,888,448 1989-11-14
 109 US 4,888,448 1989-11-14
 110 US 4,888,448 1989-11-14
 111 US 4,888,448 1989-11-14
 112 US 4,888,448 1989-11-14
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ABSTRACT INDEXING IS AVAILABLE FOR THIS PATENT.

AB Thickeners, preferably galactomannans, in aqueous solutions or slurries, e.g., water gel explosives, oil well drilling fluids, and hydraulic fracturing fluids, are stabilized against thermal degradation by incorporation of an alkali metal iodide into the solution or slurry. The preferred stabilizer is the alkali metal iodide dissolved in the fluid by dissolving an alkali metal or alkali metal iodide, or ammonium or alkyl-substituted ammonium iodide, in an aqueous phase.

ABSTRACT INDEXING IS AVAILABLE FOR THIS PATENT.

101 ANSWER 4 OF 48 USPTAFULL
 102 4488448 USPTAFULL
 103 Microcapsules containing water-soluble solids
 104 Lin, Franklin, Richmond, VA, United States

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1. Title
EXAM: Primary Examiner: Niff, David M.
1991 License # 00000000
2. Number of Pages: 11
3. Exemplary List:
1991 1 Drawing: Figure 1; 1 Drawing: Fig. 2
1991 1

1. *Chlorophyll a* and *Chlorophyll b* were determined by the method of Arar and Collins (1971) using a Shimadzu 1010 spectrophotometer. The concentration of chlorophylls was expressed as $\mu\text{g mL}^{-1}$ of the sample.

10 "These cells can be used as lanterns cells or as cells im-
11 embedded within a spherical semipermeable membrane comprising a
12 polysaccharide having either single cross-linked or a polymer having a
13 molecular weight greater than 1,000. The cells within the said capsules
14 are viable, healthy, physiologically active and capable of normal
15 metabolism. The encapsulated cells are useful for propagation in a
16 mammalian body to produce substances and effect a desired chemical
17 transformation of the cells in vivo tissue.

THE INFORMATION IS AVAILABLE FOR THE FOLLOWING:

Page 41 of 45 - BEAUFORT

Abstract

TRANSMISSION OF PERSONAL MATERIAL

IN THE DISTRICT COURT OF THE UNITED STATES FOR THE DISTRICT OF COLUMBIA

1. The first group of respondents, consisting of 100 individuals, was selected from a random sample of the general population. This group was used to establish the baseline distribution of responses for each item.

[illegible]

AN 173-146 173324 6

Continuation, in part of Ser. No. US 1974-883413, filed June 13, 1974, now abandoned.

1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 26

Primary Examiner: Naff, David M.

THE FELLOWSHIP & JOURNAL

$\frac{1}{\sqrt{\pi}} \int_{-\infty}^{\infty} f(x) \delta(x-a) dx = f(a)$	$\frac{1}{\sqrt{\pi}} \int_{-\infty}^{\infty} f(x) \delta(x-a) dx = f(a)$	$\frac{1}{\sqrt{\pi}} \int_{-\infty}^{\infty} f(x) \delta(x-a) dx = f(a)$
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[illegible]

1. The first step in the process is to identify the problem or issue that needs to be addressed. This involves gathering information and understanding the context of the problem.

1. *Journal of the American Medical Association*, 1997; 277: 1033-1038.

W. J. GIBBS, JR., AND J. H. KILPATRICK

A core material such as living tissue, individual cells, enzymes, or antibodies is encapsulated in a semipermeable membrane that is permeable to small molecules for contact with the material but is impermeable to potentially deleterious large molecules. Encapsulation may be carried out by suspending the core material in a liquid medium containing a water-soluble gum that can be reversibly gelled, forming the suspension into droplets, contacting the droplets with a solution of multivalent cations to gel the droplets into discrete, shape-retaining, water-insoluble temporary vesicles and cross-linking a surface layer of the temporary vesicles to produce a semipermeable membrane around the capsules. Optionally, the gel within the membrane may be reliquified by removing multivalent cations from the gel.

DEPARTMENT OF COMMERCE

Abstract

1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 26

Figure 1. The effect of the concentration of the H_2O_2 solution on the amount of the released H_2O_2 from the H_2O_2 -loaded hydrogel. The amount of the released H_2O_2 was measured by the amount of the released H_2O_2 from the H_2O_2 -loaded hydrogel. The amount of the released H_2O_2 was measured by the amount of the released H_2O_2 from the H_2O_2 -loaded hydrogel.

Journal of Interpersonal Violence, 19(1), 67-80.

Journal of Management Studies, 19(1), 67-80.

1. $\frac{1}{2} \times \frac{1}{2} = \frac{1}{4}$ 2. $\frac{1}{2} \times \frac{1}{4} = \frac{1}{8}$ 3. $\frac{1}{4} \times \frac{1}{4} = \frac{1}{16}$ 4. $\frac{1}{2} \times \frac{1}{8} = \frac{1}{16}$ 5. $\frac{1}{4} \times \frac{1}{8} = \frac{1}{32}$ 6. $\frac{1}{8} \times \frac{1}{8} = \frac{1}{64}$

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1. *Journal of the American Medical Association*, 1997; 278: 1039-1044.

1. *Journal of the American Medical Association*, 1997; 277: 1033-1037.

with the esterification of the starting material. The esterification should be carried out in a suitable solvent, especially the **alkyl** halide. A starting **ammonium** salt of the polysaccharide, especially **ammonium** salt, is preferred. The **alkyl** halide should be preferably between 1 and 10 carbons, and the **ammonium** salt should be prepared by the esterification of the polysaccharide, in part internally esterified, preferably one of the ester groups should be in the form of a salt, in aqueous solution with a selected cationic resin with a preferably **ammonium** resin. The **alkyl**

ammonium salt of the polysaccharide ester can be obtained by esterifying the ester. These starting materials are available in the above species of algae, or from other sources.

0000 The salts of organic acids are especially those of **aliphatic**, **aromatic**, **cycloaliphatic** or heterocyclic acids. The salts of this type may derive from the specifically active, but inactive, amines, or from amines with a therapeutic action. In either case, special consideration should be given to **aliphatic** amines, for example, mono-, di- and trialkylamines, with alkyl groups with a maximum of 10 carbon atoms, **aryalkylamines** with the alkyl group of carbon atoms in the **aliphatic** part and where aryl groups are present being preferably substituted by between 1 and 6 groups of carbon atoms, the specifically acceptable.

0000 The starting materials for the preparation of the invention. The invention especially concerns cross-linked acidopolymers derived from hyaluronic acid, from **alginate** acid, from carboxymethylcellulose, from carboxymethylamide and from carboxymethylchitin.

0000 The invention is due to the biological origin of the starting substrate, which permits the new crosslinked substances to be used in **cosmetics**, **surgery** and **medicine** in general.

0000 The invention is known as "anti-inflammatory-NIF-Na⁺ hyaluronate", described by Bilas in the pamphlet "Healin"--A new use for its use in **Ophthalmic Surgery**--D. Miller & S. Sternmann, eds. J. Wiley & Sons N.Y. 1963, p. 5.

0000 The **alginate** acid to be used to prepare new derivatives may be obtained by extraction from various natural materials, especially from seaweeds. It was gathered, in the origin and in the plant. The main species of known algae used to obtain **alginate** are for example *Macrocystis pyrifera*, *Laminaria Cloustonii*, *Laminaria agardhii*, *Laminaria flexilis*, *Laminaria digitata*, *Enteromorpha flexilis* and *Enteromorpha flexilis*. **Alginic** acid is found in the algae as a diffuse component of the cell walls in the form of a mixture of its various alkaline salts, among which feature especially sodium salt, a mixture known also as **algin**. These salts are usually extracted in aqueous conditions with a solution of sodium carbonate and from this extract **alginic** acid can be obtained directly by precipitation with an acid, for example a mineral acid such as hydrochloric acid, or.

0000 **Alginic** acid or alkaline **alginates** can however be obtained by microbiological methods, for example by fermentation with *Enterobacter aerogenes* or *Enterobacter putida*, *Escherichia coli*, *Streptococcus* or *Enterobacter* membrane mutants. Preparation of the various types of **alginic** acid is described in literature. For the purpose of the present invention, purified **alginic** acid is used.

0000 The above mentioned procedure, or whether the **alginic** acid is at the end of the procedure, the alcohols may belong to the **aliphatic**, **aromatic**, **cycloaliphatic** or heterocyclic series.

0000 Alcohols of the **aliphatic** series for use as esterified components are for example those with a maximum of 10 carbon atoms, with one or two hydroxyl groups, or with one or two hydroxyl groups. If the above groups containing hydroxyl groups, there are preferably in the **aliphatic** radical, or in the **aromatic** radical, with a maximum of 10 carbon atoms, or in the **cycloaliphatic** radical, with a maximum of 10 carbon atoms.

0000 In the series **aliphatic** saturated alcohols, the alcohols should be given as examples: methyl, ethyl, propyl, butyl, and of special importance for the.

0000 In the series **aliphatic** unsaturated alcohols, special mention should be made of the

aliphatic

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aliphatic

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When the highly sensitive nature of the radio, especially for **aliphatic** groups, is exemplified by the fact that with a 1000-gram sample of a polymer with a high degree of crystallinity, the detection of a 100-gram impurity of a polymer with a high degree of crystallinity, which is not used in the preparation of films for the treatment of wounds and in surgery. The use of a 1000-gram sample of a polymer with a high degree of crystallinity for the treatment of wounds and in surgery is not possible. The use of a 1000-gram sample of a polymer with a high degree of crystallinity for the treatment of wounds and in surgery is not possible.

100 In the preparation of the 1st World Conference and surgical
101 studies, it is possible also to include in some cases persons
102 suffering in order to improve their mechanical or other lesions, such as

Further application in the fields of **medicine** and **surgery** of the cross-linked cyclomatic products is provided by the preparation of various solid inserts such as plates, discs, screws, etc.

The fact, with its self-evident implication, that there is no alternative to the use of force in these circumstances is a statement of the most basic principle of medicine.

Part of the applications in the fields of **medicine** and **surgery** of the new hyaluronic derivatives according to the present invention are preparations made of expanded material, especially in the form of sponges, for the treatment of **wounds** and various lesions.

1000 The above applications of the cross-linked principle to a hypothetical
1001 and base represent the ideal solution for these primary and
1002 surgical articles which are intended to be implanted in the way
1003 is entered into human or animal organisms in a variety of ways.
1004 articles, using other cross-linked polymeric materials, such as the
1005 invention, such as those mentioned above and especially in the case of
1006 alginic acid base. In the same way, too, the cross-linked polymeric
1007 products are broken down in the organism to give out polysaccharides

500000 At the cross-linked **alginic** acid products, special attention should be given to industrial and household uses, for articles and accessory articles and their uses. These, especially in the form of cross-linked partial salts, precisely further extend the range of inert articles, such as especially lower **aliphatic** alcohols, for the preparation of films, which can be widely used in the food industry, for the manufacture of ice-creams, . . . films. Another property is their ability to emulsify and to stabilize emulsions. From this point of view, too, the **alginic** cross-linked products are important in the food industry, where they serve in the preparation of condiments and for the stabilization of many drinks such as beer and fruit juices, sauces and syrups. As emulsifiers, **alginic** cross-linked products can be used in the manufacture of polishes, anti-freeze, . . . , lardine and as stabilizers in the cosmetics and . . .

Alginic Acid

alginic acid obtained from Laminaria hyperborea; 100 g; 100 mg
 100 g of a monomeric unit are substituted in 4.1 g of DMSO.

1977 Preparation of Cross-Linked Alginic Acid

1.0000 g of **alginate** acid tetrabutylammonium salt (from **alginate** acid obtained from *Arthrophyllum medusarum*) were added to 100 ml of a methanolic unit are solubilized in 100 ml of MeOH.

Alginate

[E7] 4.0 g of alginic acid tetrasodium salt : 1.0 g
alginic acid obtained from Macroglossia pyrifera : 0.8 g
 5.0 g of ammonium sulfate solidified in : 1.0 g of IMC

Alginate Alginate

alginate - a substance from laminaria type algae used as a thickener.

1941. *Journal of the Royal Microscopical Society*, 61, 1-10. **Alginic**

alginate and alginate-chitosan hydrogels. *Journal of Biomedical Materials Research*, 2004, 68B, 103-111.

Alginic Acid

alginate

- 4.17 g of **alginic acid** tetraethylammonium salt of **alginic acid** obtained from *Laminaria hyperborea* is dissolved in 40 ml of DMSO.
- 1811 Preparation of the Partial Ethyl Ester of Cross-Linked **Alginic Acid**
 4.17 g of **alginic acid** tetraethylammonium salt of **alginic acid** obtained from *Laminaria hyperborea* is dissolved in 40 ml of DMSO.
- 1812 Preparation of the Partial Ethyl Ester of Cross-Linked **Alginic Acid**
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- 1813 Preparation of the Partial Ethyl Ester of Cross-Linked **Alginic Acid**
 4.17 g of **alginic acid** tetraethylammonium salt of **alginic acid** obtained from *Laminaria hyperborea* is dissolved in 40 ml of DMSO.
- 1814 Preparation of the Partial Ethyl Ester of Cross-Linked **Alginic Acid**
 4.17 g of **alginic acid** tetraethylammonium salt of **alginic acid** obtained from *Laminaria hyperborea* is dissolved in 40 ml of DMSO.
- 1815 Preparation of the Partial Ethyl Ester of Cross-Linked **Alginic Acid**
 4.17 g of **alginic acid** tetraethylammonium salt of **alginic acid** obtained from *Laminaria hyperborea* is dissolved in 40 ml of DMSO.
- 1816 The following preparations exemplify the medical uses according to the invention containing the **alginic esters**.
- 1817 What is claimed is:
1. Cross-linked acidic polysaccharides according to claim 1, wherein said polysaccharides are selected from the group consisting of **alginic acid**, **alginic acid**, **carboxymethylcellulose**, and **carboxymethylchitin**.
2. Cross-linked acidic polysaccharides according to claim 6, wherein said alcohol is a member selected from the group consisting of **aliphatic**, **araliphatic**, **cycloaliphatic** and **heterocyclic** alcohols.
3. Cross-linked acidic polysaccharides according to claim 7, wherein said alcohols of the **aliphatic** series have a maximum of 34 carbon atoms and may be substituted by one or two functional groups selected from the group consisting of hydroxyl, amino, and alcohols of the **aliphatic** series may be interrupted in the main chain by heteroatoms selected from the group consisting of oxygen, sulfur and . . .
4. Cross-linked acidic polysaccharides according to claim 7, wherein said alcohols of the **araliphatic** series have only one benzene residue and have an **aliphatic** chain with a maximum of 4 carbon atoms and the benzene residue may be substituted by between 1 and 3 methyl or hydroxy groups, or by halogen atoms, and wherein the **aliphatic** chain may be substituted by one or two functions selected from the group consisting of free amino groups, mono- or . . .
14. Cross-linked acidic polysaccharides according to claim 7, wherein said alcohols of the **cycloaliphatic** or **aliphatic** -**cycloaliphatic** series are mono- or polycyclic hydrocarbons with a maximum of 34 carbon atoms.
15. Cross-linked acidic polysaccharides according to claim 7, wherein said heterocyclic alcohols are mono- or polycyclic **cycloaliphatic** or **aliphatic** **cycloaliphatic** alcohols interrupted in the main chain by one or more heteroatoms selected from the group consisting of . . .
16. A salt according to claim 17, wherein said salt is a **aliphatic**, **araliphatic**, **cycloaliphatic** or **heterocyclic** salt.
17. Mono- and tri-alkylamines with a maximum of 3 carbon atoms, **aliphatic** amines with a maximum of 1 carbon atom, **aliphatic** part and a benzene group as an **araliphatic** part, optionally substituted by between 1 and 3 methyl groups or halogen.
18. Cross-linked acidic polysaccharides or a salt thereof according to claim 1, wherein said polysaccharide is **alginic acid**.

- ... A process according to claim 4, wherein said α is a β -substituted event
is a diolide if said α is a diolide of a low **aliphatic**
weight with an alkyl having a maximum of 6 carbons.

1. *Chlorophyll a* and *Chlorophyll b* were determined by the method of Lichtenthaler and Whistler (1973). The total chlorophyll content was determined by the method of Arar and Cook (1980). The carotenoid content was determined by the method of Lichtenthaler and Whistler (1973). The total carotenoid content was determined by the method of Arar and Cook (1980). The total protein content was determined by the method of Lowry et al. (1951). The total lipid content was determined by the method of Bligh and Dyer (1959). The total carbohydrate content was determined by the method of Dubois and Gilles (1950). The total nucleic acid content was determined by the method of Burton (1956). The total ash content was determined by the method of AOAC (1990). The total moisture content was determined by the method of AOAC (1990). The total dry matter content was determined by the method of AOAC (1990). The total organic acid content was determined by the method of AOAC (1990). The total alkaloid content was determined by the method of AOAC (1990). The total flavonoid content was determined by the method of AOAC (1990). The total phenolic content was determined by the method of AOAC (1990). The total tannin content was determined by the method of AOAC (1990). The total saponin content was determined by the method of AOAC (1990). The total sterol content was determined by the method of AOAC (1990). The total vitamin content was determined by the method of AOAC (1990). The total mineral content was determined by the method of AOAC (1990). The total fiber content was determined by the method of AOAC (1990). The total energy content was determined by the method of AOAC (1990). The total caloric content was determined by the method of AOAC (1990). The total protein content was determined by the method of Lowry et al. (1951). The total lipid content was determined by the method of Bligh and Dyer (1959). The total carbohydrate content was determined by the method of Dubois and Gilles (1950). The total nucleic acid content was determined by the method of Burton (1956). The total ash content was determined by the method of AOAC (1990). The total moisture content was determined by the method of AOAC (1990). The total dry matter content was determined by the method of AOAC (1990). The total organic acid content was determined by the method of AOAC (1990). The total alkaloid content was determined by the method of AOAC (1990). The total flavonoid content was determined by the method of AOAC (1990). The total phenolic content was determined by the method of AOAC (1990). The total tannin content was determined by the method of AOAC (1990). The total saponin content was determined by the method of AOAC (1990). The total sterol content was determined by the method of AOAC (1990). The total vitamin content was determined by the method of AOAC (1990). The total mineral content was determined by the method of AOAC (1990). The total fiber content was determined by the method of AOAC (1990). The total energy content was determined by the method of AOAC (1990). The total caloric content was determined by the method of AOAC (1990).

[illegible]

alginate :

By adding this to applied "griping" the "griping" is limited to the
with a "griping" in the "griping". This means the "griping" is limited to
the "griping" **alginate**, which means the "griping" is limited to the
"griping" is limited to the "griping" in the "griping", which means the
"griping" is limited to the "griping" in the "griping", which means the

1. The **alginate** has been used for the modification of the
for use in the pharmaceutical industry. From patent of J. L. H. N. J.
4th ed. (1961), 5th ed. (1961), N. J. L. H. N. J. (1961) contains the
the method of treatment and the effect of treatment on the
wounds, and the **alginate** films, which are

alginate is an edible alga consisting of brown or green plants growing in shallow salt water. The plants are harvested, washed, and then dried. The dried plants are then processed into a fine powder. The powder is then used to make **alginate** tablets. **alginate** tablets are used for the treatment of stomach, flatulence, and in the treatment of hemorrhoids. **alginate**, sodium and calcium **alginates** are also used as a laxative for pills, and sodium **alginate** is also used for the treatment of constipation.

Also used in industry in many of the above mentioned cases are the **alginic acid esters** or salts of such esters, more particularly ethylene glycol and propylene glycol esters. The latter is used for example in U.S. Pat. 2,337,813 by Academic Press, Inc. 1949, pp. 44-449. The above mentioned esters have been claimed by the U.S. **alginic acid**, or its salt or partial salt, with ethylene glycol or propylene glycol. This preparation has been claimed in U.S. Patents in the preparation of the above mentioned **alginic acid** esters and esters of divalent alcohols by reaction of an **aliphatic hydrazine epoxide**, possibly substituted or interrupted by hetero atoms in the carbon atom chain (see for example U.S. Pat. 2,337,813).

The **alginic acid esters** obtainable by the action of the above mentioned epoxides on the free acid or its salts, in particular, of glycol esters with a low molecular weight, and a very low degree in the case of glycol esters with **long chains**. It has not been possible to obtain glycol esters with long chains, but it is possible to obtain glycol esters with long chains.

Most Valeric alcohols, i.e. esters, both **aliphatic** and **aromatic** have not been mentioned in literature, as we all are aware of the fact of **alginic acid** obtained by reaction of **alginic acid**.

in ethereal solution of diacromethane. (Zeitschrift für physikalische Chemie, Vol. 204, p. 121, 1953; A. E. Steiner, Ind. Eng. Chem. Anal. Ed., 27, 1945, U.S. Patent No. 2,367,171. It seems however that the products of the reaction with diacromethane are not really **alginic acid esters** but rather methyl esters of an **alginic acid** partially etherified to the hydroxy alcohol group, as described for example in Example 4 of the above mentioned U.S. Patent. One methyl ester has also been obtained by reaction of silver alginate with a suitable salt of **alginic acid** in an organic solvent, with low solubility in water, but in the presence of water (U.S. Pat. No. 2,746,466). The product obtained, referred to as **alginic acid or methyl alginate**, is not to be considered as a true ester, since it is known that sugar hydroxyls are easily etherified with . . .

Also mentioned in literature are **alginic acid esters** of monovalent alcohols, with no indication however of their preparation method and no description of their chemical and physical mixed products, as in the case of methyl products. See for example Guller et al., 1961, 1962, 1963, 1964 in which a methyl **alginate** is mentioned without indication of its alginic acid preparation method, and also Guller-Frost et al., 1960-1962, 1963, 1964.

alginic acid, and esters, only three esters of alginic acid have been reported, and these are, respectively, the partial esters of allyl alcohol, and

The main object of the invention is therefore the use of **alginate** - based, edible or taste already enhanced, and the use of alginate for their stabilization.

The present invention concerns new compositions of active ingredients, preferably **alginic** acid esters and salts, in particular sodium alginates.

The present study included the use of alginate-chitosan hydrogels. Alginate-chitosan hydrogels are biocompatible and biodegradable materials that have been used in various biomedical applications, including drug delivery, tissue engineering, and wound healing. The hydrogels are formed by the cross-linking of alginate and chitosan polymers, which results in a three-dimensional network that can absorb and release water and other molecules. The hydrogels are also known for their ability to mimic the natural extracellular matrix, which makes them a promising material for tissue engineering and regenerative medicine.

... medicine

the surgery and also included, therefore, new information on the alginic acid content for use in the development of alginic acid-based products, for example, in dentistry, for the treatment, protection and preparation of, for instance, plastic dental restorations and periodontal-surgical work. The new method also made it possible to determine the alginic acid content of samples of material in the period between the preparation of the material and its use, as well as during its use.

The present invention includes a simple and very efficient procedure for the preparation of **alginic esters**, raised in the amount of preferably anionic salts of **alginic acid** with conventional alkylating agents in organic, preferably aprotic, solvents, such as dimethylsulfoxide, making a large number of new **alginic esters** available, especially those esters of multivalent alcohols, such as polyethylene glycol, and esters of aliphatic, aromatic, aliphatic-aromatic, and cyclic alcohols. The procedure may be used also for the preparation of esters derived from aliphatic or aromatic alcohols, in particular aliphatic alcohols, which are substituted with one or more

[illegible]

The new alginic esters may be used in various forms, as a dusting powder, in ointment, in solution, and in the form of a spray.

aliphatic divalent alcohols of the type of glycols, such as ester of alginic acid are already used, for example in the cosmetic industries. Therefore, part of the invention is represented by both this use of the new esters, and the corresponding articles and industrial products, such as cosmetic, sanitary, surgical and pharmaceutical articles, or food products and the like. Likewise, especially emulsifying agents, emulsion stabilizers, and thickening agents are possibly related.

With the discovery of the new **alginic** esters and, as a result of the present invention, a new use for **alginic** esters in general has also come to light, that is for the new esters and those already known. This new use is, for instance, especially those with a local, oral or rectal action, but also those for parenteral administration. The use of known **alginic** esters of kivalent alcohols was limited to the function of emulsifying agents, emulsion stabilizers, suspending agents and possibly related uses. No use in the pharmaceutical, sanitary, medical, **surgical** or operative fields was envisaged for these esters. The present invention therefore comprises all the above mentioned use and respective products, especially the pharmaceutical preparations containing an **alginic** ester as vehicle for the active substances.

... substance as their alcohol component. Of the antitussive preparations of the present invention, therefore, particularly interesting are those containing an **alginic ester** derived from a therapeutically active alcohol, such as to be defined hereafter, that is, esters comprised of **alginic acid** esterified with the alcohol moiety of a therapeutically active compound.

The invention also includes partial alginic ester compositions comprising at least one alginic acid or alginic acid derivative and at least one other organic acid or organic acid derivative. In the following description, while the meaning does not exclude this, the terms "alginic acid esters" mean

alginate esters" shall be taken to mean both the esters themselves and their active derivatives salts. In part (a), in the active derivatives pharmaceutical preparations, the term "active" is a descriptive active substance may be defined, apart from any other pharmaceutically active or derivative **alginate esters**, also by pharmaceutical active substances used to salify part (a) of the term "active" in the pharmaceutical **alginate esters**.

The use of the above mentioned alkaline **alginates** is in various sectors of industry, pharmaceuticals, **surgery** and in the food industry, presents great advantages, as they are used in solid conditions, because of the resulting gel. **alginic** acid with low solubility which may decrease in the presence of salts in a, some industrial processes.

alginate *any of a class of linear polysaccharides that are found in brown algae and are used in the manufacture of dental impressions and as a thickening agent in food*

alginates *any of a class of linear polysaccharides that are found in brown algae and are used in the manufacture of dental impressions and as a thickening agent in food*

- ...stabilized.
- ...the above mentioned... **alginic** ...
...stabilizing effect, it is observed in which the...
...stability... **alginate** ...
...stabilizer, for example... The...
...of **alginic** ...
...is... This is...
...the alginic... industrial and... fields...
...adherent of new products with properties... similar to those
...of alkaline **alginates** ... already known... but
...with effects which are more in keeping with the... of
...increasingly perfected... the...
...esters... which... substituted,
...as especially **aliphatic**,...
...These new esters will... all in the
...in... the uses...
...The low level of toxicity of the esters of... alginic
...of **alginic** ... the present invention...
...exploited mainly in the pharmaceutical, cosmetic and...
...surgical fields where the new **alginic** esters may be
...used as biodegradable plastic materials with various... as the
...may be. Thus, for example, the **alginic** ester... used
...additives for the wide range of polymeric materials for sanitary
...and surgical articles, such as polyurethanes, poly...
...polyolefins, polyamides, poly...
...the effect of rendering these materials... this case the
...of an **alginic** ester is... at...
...the surface of these materials... the same...
...In the cosmetic and pharmaceutical fields, the **alginic** esters
...of the invention may be used for the preparation of...
...and other types of medicaments for topical...
...such as...
...where they act as stabilizers...
...greater degree of stability than alkaline **alginates**,
...especially with regard to higher temperatures, and... degree of
...toxicity compared to glycol esters. In pharmaceutical... may...
...the **alginic** ester serves as vehicle and is...
...mechanically, physically mixed with the active...
...the **alginic** ester (partial) is...
...substance; and
...the **alginic** ester is esterified with an alcohol...
...represents the active substance.
...In the case of variations (2) and (3), it is possible to vary
...and combine the alcohol residues in the **alginic** ester, or the
...basic component in the salts, and it is possible... esters of a
...mixed character, in...
...Industrial sectors, such as in the food, paper, textile and
...printing industries, and in the preparation of...
...surgical articles, detergents, household articles, ...
...represented by those esters in which the properties of the
...alginic component are the properties to be exploited. The...
...esters derive from alcohols of the **aliphatic**, aromatic,
...aliphatic, cycloaliphatic or heterocyclic series... have no toxic
...pharmacological action, such as for example the... alcohols of
...the **aliphatic** series...
...Examples of these alcohols are...
...In therapy is represented by the esters... the
...pharmacological properties of the alcohol component...
...is, **alginic** ester with pharmacologically active
...alcohols, such as steroidal alcohols, such as...
...type. These esters possess... with a wide range of action.
...Even as compared to already known esters of...
...alcohols the **alginic** esters ensure a more balanced, constant
...and regular pharmacological action and generally...
...effect of the active...
...Details... of **alginic** ester...
...invention, and representing a particularly...
...the... is that...
...the...
...WILEY, 1964, 10

previous groups. That is, esters in which part of the alkyl group of the **alginic** acid are esterified with a particular kind of alcohol and in the part with a particular kind of different alcohol, or the activity of . . .

SUM: Most of the esters of **alginic** acid, in contrast to the acids, present a certain degree of solubility in organic solvents. This solubility depends on the . . . esterified carboxylic groups and on the type of alkyl group bound to the said xyl. For example, a total ester of **alginic** acid thus obtained presents at room temperature good solubility, for example, in dimethyl sulfoxide. The total esters which are all new. . .

SUM: . . . in saline and have the particular described in. Such articles may be prepared for example by dissolving an ester of **alginic** acid in an organic solvent, giving the extremely . . . solution the form of the desired article and lastly by extracting with an organic solvent with another solvent which can be mixed with the first, but in which the **alginic** acid ester is insoluble, for example an alcohol or water.

SUM: The invention includes the industrial use of the **alginic** esters in all the aforementioned sectors, especially in the alimentary, cosmetic, pharmaceutical and medical fields, in the manufacture of household and industrial articles, especially for the manufacture of sanitary and **surgical** articles.

SUM: The invention includes also the use of **alginic** esters in general, that is the new ones and those already known in literature, for the new applications described here, for example in use as vehicles for pharmacologically active substances, either in the form of **alginic** esters with therapeutically active alcohols, or as **alginic** esters of inert alcohols to mix with therapeutically active substances, or with therapeutically active bases as well as the pharmaceutical medicaments or preparations resulting from this use of **alginic** esters. In all cases the free carboxy groups may be salified with inactive but therapeutically acceptable bases.

SUM: The main object of the present invention is therefore represented by the total or partial esters of **alginic** acid with alcohols of the **aliphatic**, **araliphatic**, **cycloaliphatic** or **heterocyclic** series and by the salts of such partial esters with inorganic or organic bases, with the exception of the partial esters of bivalent **aliphatic** alcohols.

SUM: A second object of the invention is represented by the procedure for the preparation of **alginic** esters characterised by the treatment of a quaternary ammonium salt of **alginic** acid with an etherifying agent in an aprotic solvent, and, if desired, by the salification of the free carboxy groups with inorganic or organic bases, and the partial **alginic** esters thus obtained.

SUM: A third object of the invention is represented by the use of the new **alginic** esters and their salts, in substitution of the metal **alginates** or of the **alginates** of **aliphatic** bivalent alcohols, in the respective industrial sectors or in their applications in the cosmetic, pharmaceutical or sanitary-**surgical** fields, and by the respective products or industrial articles.

SUM: A fourth object of the invention is represented by the use of **alginic** esters as vehicles for pharmaceutically active substances and by pharmaceutical preparations or medicaments containing:

SUM: 1, a carrying vehicle containing a total or partial ester of **alginic** acid or salts of such partial esters with inorganic or organic bases, or pharmaceutical preparations or medicaments containing an **alginic** ester possibly salified with inorganic or organic bases, in which at least one ester group or a salified carboxy group. . .

SUM: Alcohols of the **aliphatic** series for use as esterifying components of the carboxy groups of **alginic** acid according to the present invention are, for example, those with a maximum of 14 carbon atoms, which may be . . .

SUM: In the above groups containing hydrocarbon radicals there are preferably lower **aliphatic** radicals, such as hetero atoms, oxygen, sulphur, nitrogen and sulfur. Preference is given to alcohols substituted with one or two . . .

SUM: Of the higher saturated **aliphatic** alcohols, those with 12 or 14

- special mention are for example **ethyl alcohol** and **isopropyl alcohol**, but especially important for the purposes of the present invention are the **aliphatic alcohols** in the sense that they are those with only the benzene residue and in which the **aliphatic** chain has a maximum of 4 carbon atoms, in which the benzene residue may be substituted by between 1 and 4 methyl or other groups and/or nitrogen atoms, especially chlorine, bromine or iodine and in which the **aliphatic** chain may be substituted by one or more hydroxyl groups selected from the group consisting of free and ester groups.
- SUM 1 The alcohols of the cycloaliphatic or **aliphatic** or cycloaliphatic series may derive from mono or polycyclic hydrocarbons and may have a maximum of 34 carbon atoms. Of these:
- SUM 2 Polycyclic **aliphatic** cycloaliphatic alcohols for example containing the esters of the present invention are the **steroids**, **sterols** and **steroids**, such as:
- SUM 3 The total and partial esters of **alginic** acid and of the invention have the following general formula: $\text{R}_1\text{R}_2\text{R}_3\text{R}_4\text{R}_5\text{R}_6\text{R}_7\text{R}_8\text{R}_9\text{R}_{10}$ wherein $\text{R}_1\text{R}_2\text{R}_3\text{R}_4$ and $\text{R}_5\text{R}_6\text{R}_7\text{R}_8$ are each independently hydrogen or an **aliphatic** moiety selected from the group consisting of **aliphatic**, **cycloaliphatic**, **cycloaliphatic** and heterocyclic radicals and pharmaceutically acceptable salts thereof with the proviso that said partial ester is not a:
- SUM 4 As discussed above, in some cases **alginic** acid esters in which the ester groups derive from one or more hydroxy compounds with therapeutic action, may be of use with the **alginic** acid having similar activity as that of the esterifying component. In particular, it is possible to have **alginic** esters deriving from the **steroids** from an anti-inflammatory steroid, such as one of those mentioned above, and in the:
- SUM 5 The degree of esterification of **alginic** acid with the above mentioned alcohols depends first and foremost on the special properties desired for the various fields of use. In such cases, for example the skin. Usually, a high degree of esterification to the point of total esterification of **alginic** acid increases its lipophilic character and therefore decreases its solubility in water. For a use in therapy of the new, it is of utmost importance to reach the degree of esterification in order to ensure, despite good increased lipophilia compared to metal **alginates**, a sufficient degree of hydrophilicity, for example a solubility of 10 mg/ml. Naturally it is necessary to consider also the:
- SUM 6 As has been said previously, esterification of the hydroxy groups of **alginic** acid may play several roles, to be exploited in various fields, for example in **medicine**, using the esters as therapeutic agents or in **surgery** using them as plaster articles. For use in therapy we have already said that esterification of an alcohol can in itself be considered therapeutically active, such as anti-inflammatory corticosteroids for example, with **alginic** acid as a means of improving therapeutic efficacy.
- SUM 7 With regard to similar therapeutically active alcohols **alginic** acid acts therefore as a particularly efficient vehicle which is perfectly compatible with the biological environment. Many of these pharmacologically active esters with therapeutically active alcohols it is possible to esterify part or all of the remaining carboxy groups of the **alginic** component with pharmacologically inert alcohols, such as for example saturated lower **aliphatic** alcohols, for example ethyl or isopropyl alcohols.
- SUM 8 It is possible to obtain drugs than those available up till now. It is possible for example to obtain drugs with a "retard" action with **alginic** esters with therapeutically active alcohols, providing also with therapeutically active bases.
- SUM 9 For cosmetic purposes it is preferable to use total or partial esters of **alginic** acid with pharmacologically inert alcohols, for example saturated or unsaturated **aliphatic** alcohols, for example substituted alcohols of this type with straight or branched chains, for example between 1 and 4 carbon atoms.
- SUM 10 For example alcohols with between 1 and 4 carbon atoms, especially with methyl groups. Particularly interesting are alcohols with cycloaliphatic and **aliphaticcycloaliphatic** alcohols derived from terpenes, such as those mentioned above and other therapeutically active alcohols, which can otherwise be used in the:
- SUM 11 The alcohols to be used preferably for the manufacture of sanitary and

surgical articles are essentially the same as those mentioned above for the pharmaceutical use.

- SUMM Thus, for example, for the manufacture of **alginic**-surgical articles it is preferable to use total or partial esters with a high rate of esterification, for example between 70% and 90%.
- SUMM are these partial esters in which at least 70% and at the most 90% of all the carboxy groups of **alginic** acid are esterified, and especially those with a percentage of between 80 and 90%, are used preferably for alimentary,
- SUMM If particular interest are the salts with organic bases, especially acidized bases and, therefore, **aliphatic**, **aromatic**, **cyclic aliphatic** or **heterocyclic amines**. These and their salts may derive from therapeutically acceptable amines or from non-therapeutically suitable amines, or from amines with a therapeutic action of the first type, preferred are **aliphatic** amines, for example **ethyl-, di- and tri-ethylamines** with alkyl groups with a maximum of 6 carbon atoms or **aryloxyamines** with
- SUMM Examples of specific useful drugs are all those mentioned above having acidized basic groups regarding the **alginic** ester with therapeutically active alcohols or those mentioned here first in this text, for example the various antibiotics.
- SUMM the partial esters with the aforesaid therapeutically active bases and the use of such salts represents a particular case of **alginic** esters functioning as a vehicle, obtainable by the simple addition to the active substance of partial or total esters of
- SUMM The vehicling action of **alginic** esters therefore presents possibilities for new medicaments wherein the vehicle is later
- SUMM In an **alginic** ester as described above or one of its salts.
- SUMM These medicaments are a further object of the invention. The **alginic** esters for use in these medicaments are all those in which the esterifying alcohol is itself not pharmacologically active, for example a simple **aliphatic** alcohol, as described above. Included in the invention however are medicaments of this type in which the ester is also
- SUMM In such medicaments, if partial esters of **alginic** acid are used, the possible salification of the remaining carboxy groups is carried out preferably with therapeutically neutral basic substances depending association of substances having a basic character, such as for example antibiotics containing amino groups, and if partial esters of **alginic** acid are used with remaining free carboxy groups, a salt is formed between the free carboxy groups of **alginic** acid and these basic substances. The basic substance may or may not be expensive, thus having basic salts. The new medicaments therefore include in particular the partial esters of **alginic** acid partially salified with pharmacologically active substances of basic character, as described above. The nonesterified carboxy groups are also
- SUMM The use of **alginic** esters as a vehicle is particularly useful in ophthalmology, where it is possible to observe a particular compatibility of the
- SUMM By using the esters of the present invention these difficulties can be overcome. The presence of the **alginic** ester as vehicle in ophthalmic drugs allows for the formulation of excellent preparations with no concentration gradient of the active
- SUMM systemic effect thanks to transcutaneous absorption, for example in suppositories. All these applications are suitable both in human and veterinary **medicine**. In human **medicine** the new medicaments are particularly suitable for oral administration. The present invention therefore also includes in particular any
- SUMM established with respect to their use in the various fields of therapy, beginning with the distinction between human and veterinary **medicine** and then specifying the various sectors of application with respect to the organs or tissues to be treated, for example anti-inflammatory, vasoconstrictor, antibacterial, and anal drugs. In the field of ophthalmology, the indications are in particular for example: **mytic**, anti-inflammatory, **wound** healing and antipruritic effects.
- SUMM or several antibiotics with the aim of obtaining a **mytic**, or anal or antipruritic with a hydrating or a **mytic** **wound** healer or an anti-allergic agent etc. For example, it is possible to use

the following combinations of pharmaceutical active substances are possible:

- SUMM: associations of various active substances, but it is not limited to these fields, but in all the above-mentioned fields.
- SUMM: **medicine** it is possible to use associations similar to those already in use for the pharmaceutical preparation of new drugs.
- SUMM: the new-invented salts of the active substances, of a basic character, the salts formed with a partial **alginic acid** may be of various types. That is, all of the salts of the active substances may be classified as follows:
- SUMM: According to a main aspect of the invention, however, the medicaments containing the **alginic ester** or its salts are used with therapeutically active or inactive substances as follows alone (excepting possibly an aqueous all types of medicaments mentioned here and also mixtures of such medicaments, as well as possibly mixtures of the new **alginic ester** with the **alginic acid** or mixtures of their salts, for example, with salts:
- SUMM: hydrocortisone, prednisolone, flurimetholone, prednisolone and possibly their esters, for example propylprednisolone, corticosteroid anti-inflammatories, for example indomethacin, naproxen, ibuprofen, flurbiprofen; wound healers such as epidermal growth factor (EGF); local anesthetics, such as Benzocaine, propylparal and possibly their salts; cholinergic agonists such:
- SUMM: substances are used, such as those reported above, the salts of the basic active substances and the partial ester of **alginic acid** may be mixed salts of one or more of such active substances or possibly mixed salts of this type. with the above-mentioned metals or bases. For example it is possible to prepare salts of a partial ester of **alginic acid** with a pharmaceutically active, inactive alcohol, for example a lower alkyl, and with a certain percentage of the acid groups. one of the above-mentioned metals. It is possible to mix this type of mixed salt with free **alginic acid** or its fractions or their metal salts, as indicated above for the medicaments constituted by salts of only one.
- SUMM: to determine by analogy which medicaments according to the present invention are to be used in the other fields of **medicine** mentioned above, such as otolaryngology or about the use in internal **medicine**. For example, in endocrinology, it is possible to use preparations absorbed intradermally or through the skin, for example by rectal.
- SUMM: METHODS OF PREPARATION FOR THE **ALGINIC ESTERS**
- SUMM: According to the chemically new and original process of the present invention, the **alginic acid esters** may be prepared to advantage starting with quaternary ammonium salts of **alginic acid** with an etherifying agent in a preferably aprotic organic solvent, such as dialkylsulfoxides, dialkylcarboxamides, and in particular lower alkyl dialkylsulfoxides, above all dimethylsulfoxide, and lower alkyl dialkylamides of lower **aliphatic acids**, such as dimethyl or diethyl formamide or dimethyl or diethylacetamide. It is possible, however, to use other solvents which are not always aprotic, such as alcohols, ethers, ketones, esters, especially **aliphatic** or heterocyclic alcohols and ketones with a low boiling point, such as hexafluoroisopropanol and trifluoroethanol. The reaction is brought about.
- SUMM: The preferred esterification process, therefore, comprises reacting, in an organic solvent, a quaternary ammonium salt of **alginic acid** with a stoichiometric quantity of a compound of the formula
- SUMM: wherein A is selected from the group consisting of **aliphatic**, **araliphatic**, **cycloaliphatic**, **aliphatic-cycloaliphatic** and heterocyclic radicals and X is a halogen atom, and the stoichiometric quantity of A-X is determined by the formula
- SUMM: As starting quaternary **ammonium salts** it is preferable to use lower **ammonium tetralkylates**, the **alkyl groups** having preferably between 1 and 6 carbon atoms. Most of the **alginate of tetrabutylammonium** is used. These
- SUMM: quaternary **ammonium salts** can be prepared by reacting a metal salt of **alginic acid**, preferably one of those mentioned above, especially sodium or potassium salt, in aqueous solution with a sulfonic resin sulfated with the quaternary **ammonium salt**.

The tetraalkylammonium alginates derived from **alkyls**, especially **alkyls** with between 1 and 4 carbon atoms, are new and find another aspect of the present invention. Unexpectedly, these salts proved to be soluble in the same organic solvents, and esterification of **alginic acid** and its salts. The present new procedure is therefore made possible and gives abundant yields. Only by using this procedure, it is possible to exactly determine the amount of carboxy groups of **alginic acid** to be esterified.

THE PRESENT variation of the previously specified procedure in reacting a preparation of sodium salt of **alginic acid**, suspended in a suitable solution such as dimethylsulfoxide, with an alkyl halide as an esterating agent in the presence of a catalyzing agent, such as tetraethylammonium iodide. The new procedure made it possible to obtain, as already stated, the total esters of **alginic acid** and also substituted alcohols such as glycols, which were previously unobtainable.

TO prepare new esters according to the present invention, it is possible to use **alginic acids** of any origin, such as from algae or the acids extracted from the above mentioned natural material. The preparation of these acids is described in literature. It is preferable to use purified **alginic acids**.

PREP: Preparation of the Tetraethylammonium Salt of **Alginic Acid**

PREP: 1 m. Eq. of a sodium salt of **alginic acid**, corresponding to 2 g. of dry compound, are solubilized in 400 ml of distilled water. The solution is then:

PREP: Preparation of the (Partial) Ethyl Ester of **Alginic Acid**--10% of the Carboxy Groups Esterified--20% of the Carboxy Groups Sulfated

PREP: 1 g (23.9 m. Eq.) of the tetraethylammonium salt of **alginic acid** (prepared from **alginic acid** obtained from *Leishmania hyperborea*) are solubilized in 400 ml of DMSO at 25°C. (ee. C. 1.377 g (21.39 m. Eq.).

PREP: Preparation of the (Partial) Ethyl Ester of **Alginic Acid**--30% of the Carboxy Groups Esterified--70% of the Carboxy Groups Sulfated

PREP: 10 g (23.9 m. Eq.) of the tetraethylammonium salt of **alginic acid** (prepared from **alginic acid** obtained from *Alginium nodosum*) are solubilized in 400 ml of DMSO at 25°C. (ee. C. 1.41 g (21.5 m. Eq.).

PREP: Preparation of the (Partial) Ethyl Ester of **Alginic Acid**--50% of the Carboxy Groups Esterified--50% of the Carboxy Groups Sulfated

PREP: 10 g (23.9 m. Eq.) of the tetraethylammonium salt of **alginic acid** (prepared from **alginic acid** obtained from *Marine algae pyrifera*) are solubilized in 400 ml of DMSO at 25°C. (ee. C. 1.47 g (21.9 m. Eq.).

PREP: Preparation of the (Partial) Ethyl Ester of **Alginic Acid**--70% of the Carboxy Groups Esterified--30% of the Carboxy Groups Sulfated

PREP: 10 g (23.9 m. Eq.) of the tetraethylammonium salt of **alginic acid** (prepared from **alginic acid** obtained from *Leishmania hyperborea*) are solubilized in 400 ml of DMSO at 25°C. (ee. C. 1.64 g (26.7 m. Eq.).

PREP: Preparation of the (Partial) Ethyl Ester of **Alginic Acid**--90% of the Carboxy Groups Esterified--10% of the Carboxy Groups Sulfated

PREP: 10 g (23.9 m. Eq.) of the tetraethylammonium salt of **alginic acid** (prepared from **alginic acid** obtained from *Marine algae pyrifera*) are solubilized in 400 ml of DMSO at 25°C. (ee. C. 3.19 g (41.8 m. Eq.).

PREP: Preparation of the (Partial) Isopropyl Ester of **Alginic Acid**--50% of the Carboxy Groups Esterified--50% of the Carboxy Groups Sulfated

PREP: 1 g (23.9 m. Eq.) of the tetraethylammonium salt of **alginic acid** (prepared from **alginic acid** obtained from *Alginium nodosum*) are solubilized in 400 ml of DMSO at 25°C. (ee. C. 3.77 g (41.5 m. Eq.).

PREP: Preparation of the (Partial) Isopropyl Ester of **Alginic Acid**--70% of the Carboxy Groups Esterified--30% of the Carboxy Groups Sulfated

PREP: 1 g (23.9 m. Eq.) of the tetraethylammonium salt of **alginic acid** (prepared from **alginic acid** obtained from *Leishmania hyperborea*) are solubilized in 400 ml of DMSO at 25°C. (ee. C. 3.77 g (41.5 m. Eq.).

- 181 Preparation of the (Partial) Isopropyl Ester of **Alginic Acid**--1* of the Carboxy Groups Esterified--1* of the Carboxy Groups Sulfated
- 182 10 g (13.3 m. Eq.) of the tetrabutylammonium salt of **alginic acid** prepared from **alginic acid** obtained from *Macrocystis pyrifera* are solubilized in 400 ml of DMSO at 25°C for 24 h. C. 1.40 g (16.7 m. Eq.).
- 183 Preparation of the (Partial) Isopropyl Ester of **Alginic Acid**--1* of the Carboxy Groups Esterified--7* of the Carboxy Groups Sulfated
- 184 10 g (13.3 m. Eq.) of the tetrabutylammonium salt of **alginic acid** prepared from **alginic acid** obtained from *Macrocystis pyrifera* are solubilized in 400 ml of DMSO at 25°C for 24 h. C. 1.40 g (16.7 m. Eq.).
- 185 Preparation of the (Partial) Isopropyl Ester of **Alginic Acid**--1* of the Carboxy Groups Esterified--7* of the Carboxy Groups Sulfated
- 186 10 g (13.3 m. Eq.) of the tetrabutylammonium salt of **alginic acid** prepared from **alginic acid** obtained from *Macrocystis pyrifera* are solubilized in 400 ml of DMSO at 25°C for 24 h. C. 1.40 g (16.7 m. Eq.).
- 187 Preparation of the (Partial) Isopropyl Ester of **Alginic Acid**--1* of the Carboxy Groups Esterified--7* of the Carboxy Groups Sulfated
- 188 10 g (13.3 m. Eq.) of the tetrabutylammonium salt of **alginic acid** prepared from **alginic acid** obtained from *Macrocystis pyrifera* are solubilized in 400 ml of DMSO at 25°C for 24 h. C. 1.40 g (16.7 m. Eq.).
- 189 Preparation of the (Partial) Isopropyl Ester of **Alginic Acid**--1* of the Carboxy Groups Esterified--7* of the Carboxy Groups Sulfated
- 190 10 g (13.3 m. Eq.) of the tetrabutylammonium salt of **alginic acid** prepared from **alginic acid** obtained from *Macrocystis pyrifera* are solubilized in 400 ml of DMSO at 25°C for 24 h. C. 1.40 g (16.7 m. Eq.).
- 191 Preparation of the (Partial) Isopropyl Ester of **Alginic Acid**--1* of the Carboxy Groups Esterified--7* of the Carboxy Groups Sulfated
- 192 10 g (13.3 m. Eq.) of the tetrabutylammonium salt of **alginic acid** prepared from **alginic acid** obtained from *Macrocystis pyrifera* are solubilized in 400 ml of DMSO at 25°C for 24 h. C. 1.40 g (16.7 m. Eq.).
- 193 Preparation of the (Partial) Isopropyl Ester of **Alginic Acid**--1* of the Carboxy Groups Esterified--7* of the Carboxy Groups Sulfated
- 194 10 g (13.3 m. Eq.) of the tetrabutylammonium salt of **alginic acid** prepared from **alginic acid** obtained from *Macrocystis pyrifera* are solubilized in 400 ml of DMSO at 25°C for 24 h. C. 1.40 g (16.7 m. Eq.).
- 195 Preparation of the (Partial) Isopropyl Ester of **Alginic Acid**--1* of the Carboxy Groups Esterified--7* of the Carboxy Groups Sulfated
- 196 10 g (13.3 m. Eq.) of the tetrabutylammonium salt of **alginic acid** prepared from **alginic acid** obtained from *Macrocystis pyrifera* are solubilized in 400 ml of DMSO at 25°C for 24 h. C. 1.40 g (16.7 m. Eq.).
- 197 Preparation of the (Partial) Isopropyl Ester of **Alginic Acid**--1* of the Carboxy Groups Esterified--7* of the Carboxy Groups Sulfated
- 198 10 g (13.3 m. Eq.) of the tetrabutylammonium salt of **alginic acid** prepared from **alginic acid** obtained from *Macrocystis pyrifera* are solubilized in 400 ml of DMSO at 25°C for 24 h. C. 1.40 g (16.7 m. Eq.).
- 199 Preparation of the (Partial) Isopropyl Ester of **Alginic Acid**--1* of the Carboxy Groups Esterified--7* of the Carboxy Groups Sulfated
- 200 10 g (13.3 m. Eq.) of the tetrabutylammonium salt of **alginic acid** prepared from **alginic acid** obtained from *Macrocystis pyrifera* are solubilized in 400 ml of DMSO at 25°C for 24 h. C. 1.40 g (16.7 m. Eq.).

- 1870 10 g (28.3 m. Eq.) of the tetrabutylammonium salt of **alginate** acid prepared from **alginate** acid obtained from *Laminaria hyperborea* are solubilized in 400 ml of DMSO at 40°C. at 100 mm. Hg. 11.0 m. Eq. . . .
- 1871 Preparation of the Partial Benzyl Ester of **Alginic Acid** --40% of the Carboxylic Groups Esterified--75% of the Carboxylic Groups Salified
10 g (28.3 m. Eq.) of the tetrabutylammonium salt of **alginate** acid prepared from **alginate** acid obtained from *Laminaria hyperborea* are solubilized in 400 ml of DMSO at 40°C. at 100 mm. Hg. 11.0 m. Eq. . . .
- 1872 Preparation of the Partial Benzyl Ester of **Alginic Acid** --40% of the Carboxylic Groups Esterified--75% of the Carboxylic Groups Salified
10 g (28.3 m. Eq.) of the tetrabutylammonium salt of **alginate** acid prepared from **alginate** acid obtained from *Laminaria hyperborea* are solubilized in 400 ml of DMSO at 40°C. at 100 mm. Hg. 11.0 m. Eq. . . .
- 1873 Preparation of the Methyl Ester of **Alginic Acid**
10 g (28.3 m. Eq.) of the tetrabutylammonium salt of **alginate** acid prepared from **alginate** acid obtained from *Laminaria hyperborea* are solubilized in 400 ml of DMSO at 40°C. at 100 mm. Hg. 11.0 m. Eq. . . .
- 1874 Preparation of the Benzyl Ester of **Alginic Acid**
10 g (28.3 m. Eq.) of the tetrabutylammonium salt of **alginate** acid prepared from **alginate** acid obtained from *Laminaria hyperborea* are solubilized in 400 ml of DMSO at 40°C. at 100 mm. Hg. 11.0 m. Eq. . . .
- 1875 Preparation of the Ter-butyl Ester of **Alginic Acid**
10 g (28.3 m. Eq.) of the tetrabutylammonium salt of **alginate** acid prepared from **alginate** acid obtained from *Laminaria hyperborea* are solubilized in 400 ml of DMSO at 40°C. at 100 mm. Hg. 11.0 m. Eq. . . .
- 1876 Preparation of the Isopropyl Ester of **Alginic Acid**
10 g (28.3 m. Eq.) of the tetrabutylammonium salt of **alginate** acid prepared from **alginate** acid obtained from *Laminaria hyperborea* are solubilized in 400 ml of DMSO at 40°C. at 100 mm. Hg. 11.0 m. Eq. . . .
- 1877 Preparation of the Ethyl Ester of **Alginic Acid**
10 g (28.3 m. Eq.) of the tetrabutylammonium salt of **alginate** acid prepared from **alginate** acid obtained from *Laminaria hyperborea* are solubilized in 400 ml of DMSO at 40°C. at 100 mm. Hg. 11.0 m. Eq. . . .
- 1878 Preparation of the Amikacin Salt of **Alginic Acid** Partially Esterified With Ethanol--75% of Carboxylic Groups Esterified With Ethanol--25% of Carboxylic Groups Salified With Amikacin
10.1 g of a 75% ethyl ester of **alginate** acid and 10.0 g of a 25% (corresponding to 1 m. Eq. of a monomeric unit relative to the non-esterified carboxyl), . . .
- 1879 Preparation of Erythromycin Salt of **Alginic Acid** Partially Esterified With Ethanol--75% of Carboxylic Groups Esterified With Ethanol--25% of Carboxylic Groups Salified With Erythromycin
10.1 g of a 75% ethyl ester of **alginate** acid and 10.0 g of a 25% (corresponding to 1 m. Eq. of a monomeric unit relative to the non-esterified carboxyl), . . .
- 1880 Preparation of Streptomycin Salt of **Alginic Acid** Partially Esterified With Ethanol--75% of Carboxylic Groups Esterified With Ethanol--25% of Carboxylic Groups Salified With Streptomycin
10.1 g of a 75% ethyl ester of **alginate** acid and 10.0 g of a 25% (corresponding to 1 m. Eq. of a monomeric unit relative to the non-esterified carboxyl), are . . .
- 1881 Preparation of the Partial and Mixed Ethanol and Benzyl Ester of **Alginic Acid** --40% of Carboxylic Groups Esterified With Ethanol--25% of Carboxylic Groups Esterified With Benzyl Ester--35% of Salified Carboxylic Groups Na
10.1 g of the tetrabutylammonium salt of **alginate** acid prepared from *Laminaria hyperborea* are solubilized in 400 ml of DMSO at 40°C. at 100 mm. Hg. 11.0 m. Eq. . . .
- 1882 Preparation of the Partial Fluorobutyrate Ester of **Alginic Acid** --40% of Esterified Carboxylic Groups--25% of Salified Carboxylic Groups Na
10.1 g of the tetrabutylammonium salt of **alginate** acid prepared from *Laminaria hyperborea* are solubilized in 400 ml of DMSO at 40°C. at 100 mm. Hg. 11.0 m. Eq. . . .

- [illegible]

- [illegible]

the application of the material in the medical-surgical field, and the use of the material in the present invention, since the material is a water-soluble material, especially in the form of a spray, for the treatment of wounds in various types of lesions.

- 1831 The following preparations exemplify the material and are applied to the invention containing the **alginic** esters.
- 1832 Preparation of Films Using Esters of **Alginic** Acid
- 1833 A solution is prepared in dimethylsulfoxide of 1 g. of methyl ester of **alginic** acid with a concentration of 1% in dimethylsulfoxide.
- 1834 Preparation of Threads Using Esters of **Alginic** Acid
- 1835 A solution is prepared in dimethylsulfoxide of 1 g. of methyl ester of **alginic** acid with a concentration of 1% in dimethylsulfoxide.
- 1836 The solution is pressed by means of a pump into a mold.
- 1837 Preparation of a Spongy Material Made With **Alginic** Acid Esters
- 1838 1 g. of methyl ester of **alginic** acid in which all the carboxylic groups are esterified, contained for example as described in Example 1, are dissolved in . . .
- 1839 Preparation of a Spongy Material Made With **Alginic** Acid Esters
- 1840 In the manner described in Example 1, it is possible to prepare spongy materials with other **alginic** acid esters. In the case of dimethylsulfoxide it is possible to use, if desired, any other solvent capable of dissolving . . .
- 1841 . . . similar compounds, that is, compounds which are . . . in suspension or solution of the solvent used to dissolve **alginic** acid in such a way as to form a gas, such as carbon dioxide, which has the effect of producing . . .
- 1842 What is claimed is:
 1. A total, substantially water-insoluble ester of **alginic** acid in which the esterifying alcohol is selected from the group consisting of methyl alcohol, diethyl alcohol, triethyl alcohol, n-butyl alcohol, isobutyl alcohol, octyl alcohol, dodecyl alcohol, tetradecyl alcohol, hexadecyl alcohol, octadecyl alcohol, and polyalcohol.
 2. An **alginic** acid ester according to claim 1, wherein said esterifying alcohol is selected from the group consisting of prenyl alcohol, isoprenyl alcohol, and geranyl alcohol.
 3. A method of ophthalmologic treatment which comprises administering, to the corneal surface, an ophthalmologically effective amount of a total ester of **alginic** acid in which the esterifying alcohol moiety is derived from an **aliphatic** alcohol with a maximum of 12 carbon atoms.
 4. A process for the preparation of total ester of **alginic** acid which comprises the following steps: a. reacting a tertiary ammonium salt of **alginic** acid in an organic solvent, reacting the solubilized salt of **alginic** acid from step a with an esterification agent which is gradually added and dissolves the tertiary ammonium salt, and b. . .
 5. A process according to claim 4, wherein said tertiary ammonium salt is a lower tetraalkyl ammonium salt of **alginic** acid.
 6. A process according to claim 5, wherein said tertiary ammonium salt is tetraethylammonium salt of **alginic** acid.
 7. A process according to claim 5, which, in step b, comprises adding an organic solvent to precipitate out said ester of **alginic** acid.
 8. A process according to claim 5, which further comprises washing and drying said ester of **alginic** acid.
 9. A process according to claim 5, wherein said tertiary ammonium salt of **alginic** acid is prepared by passing an **alginic** acid through a cation exchange resin; and recovering said tertiary ammonium salt of **alginic** acid.

It is a further object of the invention to provide a material that an alcohol AOH comprised by the group A and an H group is an optionally substituted **aliphatic** alcohol with a maximum of 34 carbon atoms; or b) an optionally substituted **aliphatic** alcohol with only one benzene ring and in which the **aliphatic** chain has a maximum of 4 carbon atoms; or c) an optionally substituted **aromatic** alcohol which is non-aromatic polyaromatic with a maximum of 34 carbon atoms; and d) an optionally substituted **aliphatic**

1984 1985 1986

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AN 1986:104488 USEFUL

TI Aqueous viscoelastic surfactant solutions for hair and skin cleansing

IN Balzer, Dieter, Haltern, Germany, Federal Republic of

SA Hells Aktiengesellschaft, Marl, Germany, Federal Republic of Germany

FI No. 87488.2 1986:11

AI No. 1986-76 886 1986:11 4 - 5

AB Continuation of Ser. No. US 1985-431717, filed 11/17/85, now abandoned

SBAI DE 1984-4416566 1984:1511

LT Utility

EXNAM Primary Examiner: Gupta, Yogendra; Assistant Examiner: Vardee, John R.

LREI Olson, Spivak, McClelland, Maier & Neustadt, P.C.

CLM# Number of Claims: 11

ECL Exemplary Claim: 1

DRAW# 1 Drawing Figures: 1 Drawing Pages: 1

INVT 818

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB Aqueous, viscoelastic surfactant solutions for cleansing of hair and skin which contain:

(A) from 4 to 25% by weight of an anionic surfactant;

(B) from 0 to 10% by weight of a betainic surfactant;

(C) from 0 to 20% by weight of a nonionic surfactant;

(D) from 0 to 6% by weight of an electrolyte;

(E) from 0 to 5% by weight of a water-soluble polymer; and

(F) from 0 to 5% by weight of a further constituent, in which the sum of the amounts of (A), (B), and (C) is at least 10% by weight and the sum of the amounts of (C), (D), and (E) is between 0 and 10% by weight, in each case based on the total weight of the aqueous solution, and having a shear modulus, $G_{\text{sub}0}$, between 50 and 500 Pa at temperatures between 0 and 40 degree C. and a pH of from 4 to 8, and in which the conditions for the identity of the storage modulus, G' , and the loss modulus, G'' , are in the angular frequency range ω from 0.1 and 80 rad.multidot.s.sup.-1, exhibit optimum flow behavior for the intended applications.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

= 1 kwic

171 ANSWER 1 OF 45 USEFUL

TI Preparation of lactams from **aliphatic** α,ω -dinitriles

AB A process for the preparation of five-membered or six-membered ring lactams from **aliphatic** α,ω -dinitriles has been developed. In the process an **aliphatic** α,ω -dinitrile is first converted to an ammonium salt of an ω -nitrilecarboxylic acid in aqueous solution using a catalyst having an **aliphatic** nitrilase (EC 3.5.5.3) activity, and a combination of nitrile hydratase (EC 4.2.1.4) and nitrile hydratase (EC 3.5.1.4) activities. The ammonium salt of the corresponding lactam by hydrolysis in aqueous solution, without isolation of the intermediate ω -nitrilecarboxylic acid or ω -amino carboxylic acid. When the **aliphatic** α,ω -dinitrile is also asymmetrically substituted at the α -carbon atom, the nitrile hydrates the ω -nitrilecarboxylic acid ammonium salt resulting from hydrolysis.

SUM This invention relates to a process for the preparation of five-membered

SEARCHED BY SUSAN HANLEY 1984 1985

Page 1

A six-membered ring lactam from **aliphatic** α,ω -dinitriles by a combination of chemical and enzymal techniques. More particularly, an **aliphatic** α,ω -dinitrile is first converted to the ammonium salt of an α,ω -nitrilecarboxylic acid in aqueous solution using a catalyst having an **aliphatic** nitrilase EC 4.5.5.7 activity, and a combination of nitrile hydratase EC 4.2.1.74 and nitrilase EC 4.5.1.4 activities. The ammonium salt of the corresponding lactam is then hydrolyzed in aqueous solution, without isolation of the intermediate α,ω -nitrilecarboxylic acid or ω -aminoacetic acid. When the **aliphatic** α,ω -dinitrile is also unsymmetrical, substituted at the α -carbon atom, the nitrilase produces the α,ω -nitrilecarboxylic acid ammonium salt rather than hydrolysis.

SUM1 An additional advantage of the enzyme-catalyzed analysis of nitriles over chemical hydrolysis is that, for the hydrolysis of a variety of **aliphatic** or aromatic dinitriles, the enzyme-catalyzed reaction can be highly regioselective, where only one of the two nitrile groups is hydrolyzed.

SUM2 The corresponding carboxylic acid ammonium salt has been known for many years, but it is only recently that the use of **aliphatic** nitrilases have been reported. Kobayashi et al. (Enzym. Microb., 1994, vol. 46, 5587-5590; J. Bacteriology, (1990), vol. 132, 4807-4818) have described an **aliphatic** nitrilase isolated from *Brevibacterium melonis* K12 which catalyzed the hydrolysis of **aliphatic** nitriles to the corresponding carboxylic acid ammonium salts; several **aliphatic** α,ω -dinitriles were also hydrolyzed, and glutaronitrile was converted to 4-cyanobutyric acid ammonium salt with 100% molar conversion using resting cells as catalyst. A nitrilase from *Corynebacterium testosteroni* has been isolated which can convert a range of **aliphatic** α,ω -dinitriles to either the corresponding ω -nitrilecarboxylic acid ammonium salt or the corresponding carboxylic acid ammonium salt (Canadian patent application CA 1,116,610).

SUM3 Knowles (Biotechnology Lett., (1994), vol. 16, 41-46) have reported the use of suspensions of *Rhodococcus ruber* NCIMB 11216 having an **aliphatic** nitrilase activity for the hydrolysis of several 2-methylalkylnitriles. Complete conversion of (S)-2-methylbutyronitrile to 2-methylbutyric acid ammonium salt was obtained, while.

SUM4 A combination of two enzymes, nitrile hydratase (EC 4.2.1.74) and amidase, can be also be used to convert **aliphatic** nitriles to the corresponding carboxylic acid ammonium salts in aqueous solution. Here the **aliphatic** nitrile is initially converted to an amide by the nitrile hydratase and then the amide is subsequently converted by the.

SUM5 The intermediate formation of 5-cyanovaleic acid using *Brevibacterium* sp. R312 (nitrile hydratase and amidase activity). A. Kerridge et al. (Biorg. Medicinal Chem., (1994), vol. 2, 447-455) report the use of *Brevibacterium* sp. R312 (nitrile hydratase and amidase activity) to hydrolyze prochiral α,ω -dinitrile ammonium salts. European Patent 178,106 B1 (Mar. 31, 1993) discloses selective transformation of one of the cyano groups of an **aliphatic** dinitrile to the corresponding carboxylic acid, ester, ester or thioester using the mononitrilase activity (defined as either nitrilase or nitrile hydratase).

SUM6 No prior art has been found which describes the cyclization of ammonium salts of **aliphatic** α,ω -nitrilecarboxylic acids in aqueous solution to directly produce the corresponding lactams. In closely related art, U.S. Pat. No. 4,329,498 describes.

SUM7 The various acid ammonium salts. However, no prior art has been found which describes the cyclization of ammonium salts of **aliphatic** ω -aminoacetic acids under the reaction conditions of the present invention (i.e., in an aqueous solution containing an excess of added ammonium hydroxide) to produce the corresponding lactams. In closely related art, the cyclization of **aliphatic** ω -aminoacetic acids (not ammonium salts) to the corresponding lactams under a variety of reaction conditions has been reported. The reaction is carried out at 10 to 40 degree C. The synthesis of five-, six- and seven-membered ring lactams by cyclodehydration of **aliphatic** ω -aminoacetic acids in

- aliphatic nitrile gel in toluene, and with addition of a small amount of the water produced during the reaction, has. . .
- JUN61 No prior art has been found which describes the preparation of aliphatic **aliphatic** α,ω -dinitrile salts in aqueous solution containing methylamine or dimethylamine, with the corresponding N-methyl lactams. In closely related art, 1,5-dimethyl-2-pyridylamine was. . .
- JUN62 A process for the preparation of five-membered α,ω -lactams from **aliphatic** α,ω -dinitrile mixtures of products which are not readily available. A significant advance would be a process for the preparation of **aliphatic** α,ω -dinitrile to the corresponding ω -nitrilecarboxylic acid ammonium salt in high yield and high reselectivity, with little byproduct. . .
- JUN63 A process for the preparation of five-membered α,ω -lactams or six-membered ring lactams from **aliphatic** α,ω -dinitriles, having the steps:
- JUN64 (a) contacting an **aliphatic** α,ω -dinitrile with an aqueous reaction mixture with an enzyme catalyst characterized by either
- JUN65 (i) an **aliphatic** nitrilase activity, or
- JUN66 (ii) a combination of nitrile hydratase and amidase activities, whereby the **aliphatic** α,ω -dinitrile is converted to an ω -nitrilecarboxylic acid ammonium salt.
- JUN67 A whole cell catalyst to select for a reselective nitrilase activity or nitrile hydratase activity capable of catalyzing the conversion of **aliphatic** α,ω -dinitrile to the corresponding ω -nitrilecarboxylic acid ammonium salt. The whole cell catalyst to be treated is characterized by two types of. . .
- JUN68 (i) purified enzyme(s), or purified enzyme. The enzyme catalysts can be immobilized on a support. Microorganisms which are characterized by an **aliphatic** nitrilase activity, and used in the process are *Acidovorax facilis* 72-PF-15 (ATCC 55745), *Acidovorax facilis* 72-PF-17 (ATCC 55745), and *Acidovorax*. . .
- JUN69 A process to prepare lactams from **aliphatic** α,ω -dinitriles in high yields has been developed which utilizes a combination of enzymatic and chemical reactions. In cases where the. . .
- JUN70 A conversion of an **aliphatic** α,ω -dinitrile to the corresponding ω -nitrilecarboxylic acid ammonium salt in high yield and with high reselectivity.
- JUN71 The first step of this process is the conversion of **aliphatic** α,ω -dinitrile to the corresponding ω -nitrilecarboxylic acid ammonium salt, using an enzyme catalyst. The enzyme catalyst has either a nitrilase activity, or a combination of two enzyme activities, nitrile hydratase (NHase) and amidase, where the **aliphatic** α,ω -dinitrile is initially converted to an ω -nitrilealkylamide by the nitrile hydratase, and then the ω -nitrilealkylamide is subsequently converted to the. . .
- JUN72 A novel microbe *Acidovorax facilis* 72W (ATCC 55745) has been isolated from soil samples which had been exposed to **aliphatic** nitriles or dinitriles, and which could utilize 2-ethylsuccinonitrile as a nitrogen source. When used as a microbial whole-cell catalyst for. . .
- JUN73 There are currently no non-enzymatic methods for the selective hydrolysis of only one nitrile group of an **aliphatic** dinitrile to either an amide group or a carboxylic acid group of complete conversion of the dinitrile. If such a. . .
- JUN74 A process for the hydrolysis of **aliphatic** α,ω -dinitrile to the corresponding ω -nitrilecarboxylic acid ammonium salt in high yield and with high reselectivity, with little byproduct. . .
- JUN75 A process for the hydrolysis of **aliphatic** α,ω -dinitrile to the corresponding ω -nitrilecarboxylic acid ammonium salt in high yield and with high reselectivity, with little byproduct. . .
- JUN76 A process for the hydrolysis of **aliphatic** α,ω -dinitrile to the corresponding ω -nitrilecarboxylic acid ammonium salt in high yield and with high reselectivity, with little byproduct. . .
- JUN77 A process for the hydrolysis of **aliphatic** α,ω -dinitrile to the corresponding ω -nitrilecarboxylic acid ammonium salt in high yield and with high reselectivity, with little byproduct. . .
- JUN78 A process for the hydrolysis of **aliphatic** α,ω -dinitrile to the corresponding ω -nitrilecarboxylic acid ammonium salt in high yield and with high reselectivity, with little byproduct. . .
- JUN79 A process for the hydrolysis of **aliphatic** α,ω -dinitrile to the corresponding ω -nitrilecarboxylic acid ammonium salt in high yield and with high reselectivity, with little byproduct. . .
- JUN80 A process for the hydrolysis of **aliphatic** α,ω -dinitrile to the corresponding ω -nitrilecarboxylic acid ammonium salt in high yield and with high reselectivity, with little byproduct. . .
- JUN81 A process for the hydrolysis of **aliphatic** α,ω -dinitrile to the corresponding ω -nitrilecarboxylic acid ammonium salt in high yield and with high reselectivity, with little byproduct. . .
- JUN82 A process for the hydrolysis of **aliphatic** α,ω -dinitrile to the corresponding ω -nitrilecarboxylic acid ammonium salt in high yield and with high reselectivity, with little byproduct. . .
- JUN83 A process for the hydrolysis of **aliphatic** α,ω -dinitrile to the corresponding ω -nitrilecarboxylic acid ammonium salt in high yield and with high reselectivity, with little byproduct. . .
- JUN84 A process for the hydrolysis of **aliphatic** α,ω -dinitrile to the corresponding ω -nitrilecarboxylic acid ammonium salt in high yield and with high reselectivity, with little byproduct. . .
- JUN85 A process for the hydrolysis of **aliphatic** α,ω -dinitrile to the corresponding ω -nitrilecarboxylic acid ammonium salt in high yield and with high reselectivity, with little byproduct. . .
- JUN86 A process for the hydrolysis of **aliphatic** α,ω -dinitrile to the corresponding ω -nitrilecarboxylic acid ammonium salt in high yield and with high reselectivity, with little byproduct. . .
- JUN87 A process for the hydrolysis of **aliphatic** α,ω -dinitrile to the corresponding ω -nitrilecarboxylic acid ammonium salt in high yield and with high reselectivity, with little byproduct. . .
- JUN88 A process for the hydrolysis of **aliphatic** α,ω -dinitrile to the corresponding ω -nitrilecarboxylic acid ammonium salt in high yield and with high reselectivity, with little byproduct. . .
- JUN89 A process for the hydrolysis of **aliphatic** α,ω -dinitrile to the corresponding ω -nitrilecarboxylic acid ammonium salt in high yield and with high reselectivity, with little byproduct. . .
- JUN90 A process for the hydrolysis of **aliphatic** α,ω -dinitrile to the corresponding ω -nitrilecarboxylic acid ammonium salt in high yield and with high reselectivity, with little byproduct. . .
- JUN91 A process for the hydrolysis of **aliphatic** α,ω -dinitrile to the corresponding ω -nitrilecarboxylic acid ammonium salt in high yield and with high reselectivity, with little byproduct. . .
- JUN92 A process for the hydrolysis of **aliphatic** α,ω -dinitrile to the corresponding ω -nitrilecarboxylic acid ammonium salt in high yield and with high reselectivity, with little byproduct. . .
- JUN93 A process for the hydrolysis of **aliphatic** α,ω -dinitrile to the corresponding ω -nitrilecarboxylic acid ammonium salt in high yield and with high reselectivity, with little byproduct. . .
- JUN94 A process for the hydrolysis of **aliphatic** α,ω -dinitrile to the corresponding ω -nitrilecarboxylic acid ammonium salt in high yield and with high reselectivity, with little byproduct. . .
- JUN95 A process for the hydrolysis of **aliphatic** α,ω -dinitrile to the corresponding ω -nitrilecarboxylic acid ammonium salt in high yield and with high reselectivity, with little byproduct. . .
- JUN96 A process for the hydrolysis of **aliphatic** α,ω -dinitrile to the corresponding ω -nitrilecarboxylic acid ammonium salt in high yield and with high reselectivity, with little byproduct. . .
- JUN97 A process for the hydrolysis of **aliphatic** α,ω -dinitrile to the corresponding ω -nitrilecarboxylic acid ammonium salt in high yield and with high reselectivity, with little byproduct. . .
- JUN98 A process for the hydrolysis of **aliphatic** α,ω -dinitrile to the corresponding ω -nitrilecarboxylic acid ammonium salt in high yield and with high reselectivity, with little byproduct. . .
- JUN99 A process for the hydrolysis of **aliphatic** α,ω -dinitrile to the corresponding ω -nitrilecarboxylic acid ammonium salt in high yield and with high reselectivity, with little byproduct. . .
- JUN00 A process for the hydrolysis of **aliphatic** α,ω -dinitrile to the corresponding ω -nitrilecarboxylic acid ammonium salt in high yield and with high reselectivity, with little byproduct. . .

- 0000 **aliphatic** α,ω -dinitriles by the direct hydrogenation of the ω -nitrile-carboxylic acid ammonium salt prepared by the enzyme-catalyzed hydrolysis of **aliphatic** α,ω -dinitriles in aqueous solution. The ω -nitrile-carboxylic acid ammonium salt is isolated from the product mixture.
- 0000 After producing an aqueous product mixture containing the ω -nitrile-carboxylic acid ammonium salt from **aliphatic** α,ω -dinitriles by using an enzyme catalyst, the ω -nitrile-carboxylic acid ammonium salt is isolated from the product mixture by the reaction of the resulting aqueous solution with ammonium hydroxide. In the presence of a suitable hydrogenation catalyst was expected to produce a solution containing an **aliphatic** ω -aminocarboxylic acid ammonium salt (eq. 4): **STK3** The use of an excess of ammonia during the hydrogenation of a nitrile.
- 0000 In addition to producing lactams from **aliphatic** α,ω -dinitriles, N-methyl-lactams are prepared by the substitution of methylamine for ammonia in the reaction of aqueous solutions of the ammonium salt.
- 0000 Two microorganisms have been isolated for use as a microbial catalyst for the conversion of **aliphatic** α,ω -dinitriles to the corresponding ω -aminocarboxylic acids. The two bacteria are *ATCC 55746* and *Corynebacterium testosteroni* 8-MW-4 (ATCC 55744).
- 0000 **Aliphatic** α,ω -Dinitrile Hydrolysis Reactions
- 0000 An aqueous solution containing the ammonium salt of an **aliphatic** ω -aminocarboxylic acid is prepared by mixing the corresponding **aliphatic** α,ω -dinitrile with an aqueous suspension of the appropriate enzyme catalyst as identified in part A above. Whole microbial cells are used as catalyst without any pretreatment. Alternatively, the enzyme can be immobilized in a polymer matrix (e.g., **alginate** beads or polyacrylamide gel (PAG) particles) or on an insoluble solid support (e.g., celite) to facilitate recovery and reuse.
- 0000 Some of the **aliphatic** α,ω -dinitriles used as starting material in the present invention are not adequately water soluble. Their solubility is also dependent on the concentration of the ammonium salt.
- 0000 The final concentration of **aliphatic** ω -aminocarboxylic acid ammonium salt in the product mixture at completion of the α,ω -dinitrile hydrolysis may range from 0.1% to the solubility limit of the **aliphatic** ω -aminocarboxylic acid ammonium salt. Typically, the concentration of the ω -aminocarboxylic acid ammonium salt ranged from 0.1% M to 2.0% M.
- 0000 Catalytic hydrogenation is a preferred method for preparing an **aliphatic** amine from an **aliphatic** nitrile. In the present invention, the ω -aminocarboxylic acid produced during the hydrogenation cyclizes to the corresponding five- or six-membered ring. The ω -aminocarboxylic acid is prepared by centrifugation and filtration of the aqueous product mixture produced by the enzymatic hydrolysis of the corresponding **aliphatic** α,ω -dinitrile is first mixed with ammonium hydroxide and water to produce a solution which is then used for the reaction.
- 0000 In the following examples, which serve to further illustrate the invention and not to limit it, the % recovery of **aliphatic** α,ω -dinitriles and the % yields of the hydrolysis products formed during the microbial hydrolysis reactions were based on the initial.

1004,1

1004,1 ANSWER 1 OF 45 USPTAFULL

1004,1 1004,1 1004,1 USPTAFULL

1004,1 A protective cosmetic particulate gel delivery system and method of preparing complex gel particles

1004,1 Leinen, Pascal, Justinet T Loran, France

1004,1 Ding, Li, Justinet T Loran, France

1004,1 Paragraphics S.A.R.L., France non-U.S. applicant

1004,1 US 8,616,167 1004,1 1004,1

1004,1 US 1004,1 1004,1 1004,1

1004,1 Utility

1004,1 Primary Examiner: Bawa, Raj

1004,1 Bawa, Raj and Morfey

1004,1 Number of Claims: 14

1004,1 Exemplary Claim: 1

1004,1 5 Drawing Figures; 1 Drawing Page 5

1004,1 1004,1

1004,1 1004,1 1004,1 1004,1

AB A protective cosmetic particulate gel delivery system and method of applying applied active agent employs an agar gel and a restraining polymer to retain the active agent in the gel. The particles have an average particle diameter of at least 0.05 mm while the restraining polymer has a molecular weight of at least 50,000 daltons and retention groups to bind the active agent. The restraining polymer is selected from the group consisting of polyquaternium 24, laurdimonium hydroxyethylcellulose, cecidimonium hydroxyethylcellulose, steardimonium hydroxyethylcellulose, quaternary ammonium substituted water-soluble polysaccharides, allyl quaternary celluloses and lipolipides having or provided with retention groups to retain the active agent. The gel particles of the invention are manually crushable to break skin to increase the surface area of the gel particle matrix to expose the restraining polymer to the skin or other body surface for release of the active agent. The delivery system can be incorporated in multiphase cosmetic formulations such as gels, creams and lotions.

1004,1 1004,1 1004,1 1004,1

1004,1 1004,1

1004,1 ANSWER 1 OF 45 USPTAFULL

AB A process for the preparation of five-membered or six-membered ring lactams from **aliphatic** α,ω -dinitriles has been developed. In the process an **aliphatic** α,ω -dinitrile is first converted to an ammonium salt of an ω -nitrilecarboxylic acid in aqueous solution using a catalyst having an **aliphatic** nitrilase (EC 3.5.5.7) activity, and a combination of nitrile hydratase (EC 4.2.1.24) and nitrile hydratase (EC 3.5.1.4) activities. The ammonium salt of the ω -nitrilecarboxylic acid is then hydrogenated in aqueous solution, without isolation of the intermediate ω -nitrilecarboxylic acid or ω -nitrilecarboxylic acid. When the **aliphatic** α,ω -dinitrile is also unsymmetrical, the nitrilase produces the ω -nitrilecarboxylic acid ammonium salt resulting from hydrolysis.

1004,1 This invention relates to a process for the preparation of five-membered or six-membered ring lactams from **aliphatic** α,ω -dinitriles by a combination of biological and chemical techniques. More particularly, an **aliphatic** α,ω -dinitrile is first converted to an ammonium salt of an ω -nitrilecarboxylic acid in aqueous solution using a catalyst having an **aliphatic** nitrilase (EC 3.5.5.7) activity, and a combination of nitrile hydratase (EC 4.2.1.24) and nitrile hydratase (EC 3.5.1.4) activities. The ammonium salt of the ω -nitrilecarboxylic acid is then hydrogenated in aqueous solution, without isolation of the intermediate

1004,1 1004,1 1004,1 1004,1

1004,1

omega-nitrile-carboxylic acid or omega-nitrile-omega-carboxylic acid. When the **aliphatic** alpha,omega-dinitrile is acid hydrolyzed, the nitrile group is converted to the corresponding carboxylic acid and the nitrile salt is formed.

SUMMARY: A significant advantage of the enzyme-catalyzed hydrolysis of nitriles over chemical hydrolysis is that, for the hydrolysis of a variety of **aliphatic** nitriles, the enzyme-catalyzed reaction can be highly regiospecific, where only one of the two nitrile groups is hydrolyzed.

SUMMARY: Corresponding carboxylic acid ammonium salts have been known for many years, but it is only recently that the use of **aliphatic** nitrilases have been reported. Horiyama et al. (J. Biochem., 1967, vol. 40, 887-889; J. Bacteriology, 1967, vol. 13, 774-775) have described an **aliphatic** nitrilase isolated from *Brevibacterium* which catalyzed the hydrolysis of **aliphatic** nitriles to the corresponding carboxylic acid ammonium salts; several **aliphatic** alpha,omega-dinitriles were also hydrolyzed, and glutar nitrile was converted to 4-oxopentanoic acid ammonium salt with 100% conversion using resting cells as catalyst. A nitrilase from *Streptococcus lactis* has been isolated which can convert a range of **aliphatic** alpha,omega-dinitriles to either the corresponding carboxylic acid ammonium salt or the corresponding carboxylic acid ammonium salt. Canadian patent application 244,111, 1967.

SUMMARY: Knowles (Biotechnology Lett., (1974), vol. 16, 41-46) have reported the use of suspensions of *Brevibacterium* in which the NIMB 1116 having an **aliphatic** nitrilase activity for the hydrolysis of several 2-methylalkylnitriles. Complete conversion of 2-methylbutylnitrile to 2-methylbutyric acid ammonium salt was obtained, while.

SUMMARY: A combination of two enzymes, nitrile hydratase and amidase, can be also be used to convert **aliphatic** nitriles to the corresponding carboxylic acid ammonium salts in a two-step reaction. Here the **aliphatic** nitrile is initially converted to an amide by the nitrile hydratase and then the amide is subsequently converted by the amidase.

SUMMARY: The intermediate formation of 5-oxopentanoic acid using *Brevibacterium* sp. R312 (nitrile hydratase and amidase activity). A. Herdige et al. (Biorg. Medicinal Chem., 1974, vol. 1, 447-455) report the use of *Brevibacterium* sp. R312 (nitrile hydratase and amidase activity) to hydrolyze prothiracil. European Patent 106,106 B1 (Mar. 31, 1973) discloses selective conversion of one of the nitrile groups of an **aliphatic** dinitrile to the corresponding carboxylic acid, amide, ester or lactam using the nitrilase activity (defined as either nitrilase or nitrilase).

SUMMARY: No prior art has been found which describes the cyclization of ammonium salts of **aliphatic** omega-nitrilecarboxylic acids in aqueous solution to directly produce the corresponding lactams. In closely related art, U.S. Pat. No. 4,329,498 describes.

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SUMMARY: No prior art has been found which describes the cyclization of ammonium salts of **aliphatic** omega-nitrilecarboxylic acids in aqueous solution to directly produce the corresponding lactams. In closely related art, U.S. Pat. No. 4,329,498 describes. The synthesis of five-, six- and seven-membered ring lactams by cyclodehydration of **aliphatic** omega-nitrilecarboxylic acids in alkaline or acidic gel in toluene, and with continuous removal of the water produced during the reaction, has.

SUMMARY: No prior art has been found which describes the cyclization of ammonium salts of **aliphatic** omega-nitrilecarboxylic acids in aqueous solution containing methylamine to directly produce the corresponding N-methyl lactams. In closely related art, U.S. Pat. No. 4,329,498 describes.

SUMMARY: No prior art has been found which describes the cyclization of ammonium salts of **aliphatic** omega-nitrilecarboxylic acids in aqueous solution to directly produce the corresponding lactams. In closely related art, U.S. Pat. No. 4,329,498 describes.

aliphatic alpha,omega-dinitrile to the corresponding lactam.

DEAR WEE BY STERN HANDELS

10-44,1

1. N-methylglutamate in aqueous solution, in high yields, with high regioselectivity, with little epimerization.
2. A process for the preparation of five-membered lactams from **aliphatic** α,ω -dinitriles, having the steps:
 - a. Converting an **aliphatic** α,ω -dinitrile into an aqueous reaction mixture with an enzyme catalyst, characterized by either:
 - i. an **aliphatic** nitrilase activity, or
 - ii. a combination of nitrile hydratase and amidase activities, whereby the **aliphatic** α,ω -dinitrile is converted to the ω -nitrilecarboxylic acid ammonium salt;
 - b. Using a whole cell catalyst to select for a relatively high nitrilase activity or nitrile hydratase activity capable of following the conversion of **aliphatic** α,ω -dinitrile to the ω -nitrilecarboxylic acid ammonium salt. The whole cell catalyst to be treated is characterized by two steps:
 - i. purified enzymes, or
 - ii. purified enzymes and a support.
3. Purified enzymes, or purified enzymes and a support, which are characterized by an **aliphatic** nitrilase activity, or, in the process are *Acidovorax facilis* 7L-PF-15 (ATCC 58743), *Acidovorax facilis* 7L-PF-17 (ATCC 58748), and *Acidovorax* sp.
4. A process to prepare lactams from **aliphatic** α,ω -dinitriles in high yields has been developed which includes a combination of enzymatic and chemical steps. In cases where the:
 - a. Conversion of an **aliphatic** α,ω -dinitrile to the corresponding ω -nitrilecarboxylic acid ammonium salt in high yield and with high regioselectivity.
5. The first step of this process is the conversion of an **aliphatic** α,ω -dinitrile to the corresponding ω -nitrilecarboxylic acid ammonium salt, using an enzyme catalyst. The enzyme catalyst has either a nitrilase activity, or a combination of two enzyme activities, nitrile hydratase (NHase) and amidase, where the **aliphatic** α,ω -dinitrile is initially converted to the ω -nitrilecarboxylic acid ammonium salt by the nitrile hydratase, and then the ω -nitrilecarboxylic acid ammonium salt is subsequently converted to the ω -nitrilecarboxylic acid ammonium salt.
6. A novel microbe *Acidovorax facilis* 72W (ATCC 58744) has been isolated from soil samples which had been exposed to **aliphatic** nitriles or dinitriles, and which could utilize 2-ethylsuccinonitrile as a nitrogen source. When used as a microbial whole-cell catalyst for:
 - a. There are currently no non-enzymatic methods for the selective hydrolysis of only one nitrile group of an **aliphatic** dinitrile to either an amide group or a carboxylic acid group to complete conversion of the dinitrile. If such a:
7. *Acidovorax facilis* 72W (ATCC 58744), do not require heat-treatment of the cells prior to use as catalyst for the hydrolysis of:
 - a. **aliphatic** α,ω -dinitrile to the corresponding ω -nitrilecarboxylic acid ammonium salt of a ω -nitrilecarboxylic acid. Comparison of the yields of 4-CFA and 3-methylglutamic acid.
8. Heat-treated *Acidovorax facilis* 72W (ATCC 58744) is used as a catalyst for the hydrolysis of aqueous solutions of the unsubstituted **aliphatic** α,ω -dinitriles succinonitrile (SCN, 1.25 M) or glutaronitrile (GLN, 1.5 M), the corresponding ω -nitrilecarboxylic acid ammonium salts 3-cyanopropionic acid (3-CFA) or 3-oxopropionic acid (3-OPA).
9. More than 30 different microbial cultures isolated from soil samples which had been exposed to **aliphatic** nitriles or dinitriles, and which could grow on various nitriles or amides as a nitrogen source, were screened for high selectivity.
10. High yields by the direct hydrogenation of the ω -nitrilecarboxylic acid ammonium salt product mixture produced by the enzyme-catalyzed hydrolysis of **aliphatic** α,ω -dinitriles in aqueous solution. The method does not require the isolation of the ω -nitrilecarboxylic acid ammonium salt from the product.
11. After producing an aqueous product mixture containing the ammonium salt of a ω -nitrilecarboxylic acid from an **aliphatic** α,ω -dinitrile by using an enzyme catalyst, the removal of the enzyme catalyst and reaction of the resulting product mixture.

- ... of the **aliphatic** ω -nitrilecarboxylic acid in the presence of the catalyst was expected to produce a five- or six-membered ring containing an **aliphatic** ω -nitrilecarboxylic acid. ...
 [0000] The use of an excess of catalyst during the hydrogenation of a nitrile. ...
 [0001] In addition to producing lactams from **aliphatic** ω -nitrilecarboxylic acids, N-methyl-lactams can be prepared by the hydrogenation of ω -nitrilecarboxylic acids in the presence of a catalyst and solutions of the amine. ...
 [0002] Two microorganisms have been isolated for use as biological catalysts for the conversion of **aliphatic** ω -nitrilecarboxylic acids to the corresponding ω -nitrilecarboxylic acids. The bacteria families *Acidovorax* ATCC 55746 and *Acidovorax* *facilis* ATCC 55747. ...
 [0003] **Aliphatic** ω -nitrilecarboxylic Acid Hydrolysis ...
 [0004] An aqueous solution containing the ammonium salt of an **aliphatic** ω -nitrilecarboxylic acid is prepared by mixing the corresponding **aliphatic** ω -nitrilecarboxylic acid with an aqueous suspension of the appropriate enzyme catalyst as identified in part A above. Whole microbial cells are used as catalyst without any pretreatment. Alternatively, the cells are immobilized in a polymer matrix such as alginate-chitosan, polyacrylamide gel, SAS particles, or in an insoluble solid support such as, pellets to facilitate recovery and reuse. ...
 [0005] Some of the **aliphatic** ω -nitrilecarboxylic acids and their starting material in the present invention are slightly water-soluble. Their solubility is also dependent on the pH. ...
 [0006] The final concentration of **aliphatic** ω -nitrilecarboxylic acid ammonium salt in the product mixture at complete conversion of the ω -nitrilecarboxylic acid may range from 0.01 M to the solubility limit of the **aliphatic** ω -nitrilecarboxylic acid ammonium salt. Typically, the concentration of the ω -nitrilecarboxylic acid ammonium salt ranged from 0.01 M to 0.05 M. ...
 [0007] Catalytic hydrogenation is a preferred method for producing an **aliphatic** amine from an **aliphatic** nitrile. In the present invention, the ω -aminocarboxylic acid produced during the hydrogenation cyclizes to the corresponding five- or six- or seven-membered ring. ... ω -nitrilecarboxylic acids prepared by centrifugation and filtration of the aqueous product mixture produced by the enzymatic hydrolysis of the corresponding **aliphatic** ω -nitrilecarboxylic acid is first mixed with a solution of ammonium hydroxide and water to produce a solution which is then filtered. ...
 [0008] In the following examples, which serve to further illustrate the invention and not to limit it, the % recovery of **aliphatic** ω -nitrilecarboxylic acids and the % yields of the hydrolysis products formed during the microbial hydrolysis reaction are based on the initial. ...
 [0009] What is claimed is:
 1. Isolated microorganisms characterized by an **aliphatic** nitrilase activity and selected from the group consisting of *Acidovorax* *facilis* ATCC 55746, *Acidovorax* *facilis* ATCC 55747, *Acidovorax*. ...

1984-1985

LL ANSWER 1 OF 6 HCAPLUS COPYRIGHT L. A. W.

RN 1984-1985 HCAPLUS

IN 1984-1985

II Alkyl polyglycoside compositions and emulsions containing them with improved whiteness

IN Belcher, Tisserand, Amelin, Mantel, Loebe, Amelin, Michel, Nelly; Milano, Alain

SA Societe d'Exploitation de Produits pour les Industries Chimiques, Fr.

SI 1984-1985 Tokyo, Jpn., 6 pp.

TIEN: JPYKAP

IT Patent

LA Japanese

PAL INT 1

PATENT NO.	PRIOR DATE	APPLICATION NO.	DATE
JP 1984-1985	AL 1984-1985	JP 1984-1985	1984-1985
FR 1984-1985	AL 1984-1985	FR 1984-1985	1984-1985
EP 1984-1985	AL 1984-1985	EP 1984-1985	1984-1985

RI: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, NL, NO, SE, MD, PT, IE, SI, LT, LV, FI, RO

IPAT FR 1984-1985 1984-1985

CS MARPAT 1984-1985

AB The comps., useful as emulsifiers for cosmetic emulsions, etc., comprise 8-6% (a) alkyl polyglycoside mixts. contg. (a) 40-50% by wt. of R1O(G1)k (R1 = C16-18 linear or branched **aliph.** group; G1 = **saccharide** residue; k = 1-5) and R2O(G2)l (R2, G2, and l have the same definition as R1, G1, and l, resp.) and 5-7% by wt. of R3O(G3)m (R3 = C20-22 linear or branched **aliph.** group; G3 = **saccharide** residue; m = 1-5) and R4O(G4)n (R4, G4, and n have the same definition as R3, G3, and m, resp.) and 40-55% by wt. of RCH (R = C14-22 linear or branched **aliph.** group, preferably C16-18; RCH = R1-R4). Also claimed are emulsions contg. (a) (b) (c) (d) (e) (f) (g) (h) (i) (j) (k) (l) (m) (n) (o) (p) (q) (r) (s) (t) (u) (v) (w) (x) (y) (z) (aa) (ab) (ac) (ad) (ae) (af) (ag) (ah) (ai) (aj) (ak) (al) (am) (an) (ao) (ap) (aq) (ar) (as) (at) (au) (av) (aw) (ax) (ay) (az) (ba) (bb) (bc) (bd) (be) (bf) (bg) (bh) (bi) (bj) (bk) (bl) (bm) (bn) (bo) (bp) (bq) (br) (bs) (bt) (bu) (bv) (bw) (bx) (by) (bz) (ca) (cb) (cc) (cd) (ce) (cf) (cg) (ch) (ci) (cj) (ck) (cl) (cm) (cn) (co) (cp) (cq) (cr) (cs) (ct) (cu) (cv) (cw) (cx) (cy) (cz) (da) (db) (dc) (dd) (de) (df) (dg) (dh) (di) (dj) (dk) (dl) (dm) (dn) (do) (dp) (dq) (dr) (ds) (dt) (du) (dv) (dw) (dx) (dy) (dz) (ea) (eb) (ec) (ed) (ee) (ef) (eg) (eh) (ei) (ej) (ek) (el) (em) (en) (eo) (ep) (eq) (er) (es) (et) (eu) (ev) (ew) (ex) (ey) (ez) (fa) (fb) (fc) (fd) (fe) (ff) (fg) (fh) (fi) (fj) (fk) (fl) (fm) (fn) (fo) (fp) (fq) (fr) (fs) (ft) (fu) (fv) (fw) (fx) (fy) (fz) (ga) (gb) (gc) (gd) (ge) (gf) (gg) (gh) (gi) (gj) (gk) (gl) (gm) (gn) (go) (gp) (gq) (gr) (gs) (gt) (gu) (gv) (gw) (gx) (gy) (gz) (ha) (hb) (hc) (hd) (he) (hf) (hg) (hh) (hi) (hj) (hk) (hl) (hm) (hn) (ho) (hp) (hq) (hr) (hs) (ht) (hu) (hv) (hw) (hx) (hy) (hz) (ia) (ib) (ic) (id) (ie) (if) (ig) (ih) (ii) (ij) (ik) (il) (im) (in) (io) (ip) (iq) (ir) (is) (it) (iu) (iv) (iw) (ix) (iy) (iz) (ja) (jb) (jc) (jd) (je) (jf) (jg) (jh) (ji) (jj) (jk) (jl) (jm) (jn) (jo) (jp) (jq) (jr) (js) (jt) (ju) (jv) (jw) (jx) (jy) (jz) (ka) (kb) (kc) (kd) (ke) (kf) (kg) (kh) (ki) (kj) (kk) (kl) (km) (kn) (ko) (kp) (kq) (kr) (ks) (kt) (ku) (kv) (kw) (kx) (ky) (kz) (la) (lb) (lc) (ld) (le) (lf) (lg) (lh) (li) (lj) (lk) (ll) (lm) (ln) (lo) (lp) (lq) (lr) (ls) (lt) (lu) (lv) (lw) (lx) (ly) (lz) (ma) (mb) (mc) (md) (me) (mf) (mg) (mh) (mi) (mj) (mk) (ml) (mn) (mo) (mp) (mq) (mr) (ms) (mt) (mu) (mv) (mw) (mx) (my) (mz) (na) (nb) (nc) (nd) (ne) (nf) (ng) (nh) (ni) (nj) (nk) (nl) (nm) (nn) (no) (np) (nq) (nr) (ns) (nt) (nu) (nv) (nw) (nx) (ny) (nz) (oa) (ob) (oc) (od) (oe) (of) (og) (oh) (oi) (oj) (ok) (ol) (om) (on) (oo) (op) (oq) (or) (os) (ot) (ou) (ov) (ow) (ox) (oy) (oz) (pa) (pb) (pc) (pd) (pe) (pf) (pg) (ph) (pi) (pj) (pk) (pl) (pm) (pn) (po) (pp) (pq) (pr) (ps) (pt) (pu) (pv) (pw) (px) (py) (pz) (qa) (qb) (qc) (qd) (qe) (qf) (qg) (qh) (qi) (qj) (qk) (ql) (qm) (qn) (qo) (qp) (qq) (qr) (qs) (qt) (qu) (qv) (qw) (qx) (qy) (qz) (ra) (rb) (rc) (rd) (re) (rf) (rg) (rh) (ri) (rj) (rk) (rl) (rm) (rn) (ro) (rp) (rq) (rr) (rs) (rt) (ru) (rv) (rw) (rx) (ry) (rz) (sa) (sb) (sc) (sd) (se) (sf) (sg) (sh) (si) (sj) (sk) (sl) (sm) (sn) (so) (sp) (sq) (sr) (ss) (st) (su) (sv) (sw) (sx) (sy) (sz) (ta) (tb) (tc) (td) (te) (tf) (tg) (th) (ti) (tj) (tk) (tl) (tm) (tn) (to) (tp) (tq) (tr) (ts) (tt) (tu) (tv) (tw) (tx) (ty) (tz) (ua) (ub) (uc) (ud) (ue) (uf) (ug) (uh) (ui) (uj) (uk) (ul) (um) (un) (uo) (up) (uq) (ur) (us) (ut) (uu) (uv) (uw) (ux) (uy) (uz) (va) (vb) (vc) (vd) (ve) (vf) (vg) (vh) (vi) (vj) (vk) (vl) (vm) (vn) (vo) (vp) (vq) (vr) (vs) (vt) (vu) (vv) (vw) (vx) (vy) (vz) (wa) (wb) (wc) (wd) (we) (wf) (wg) (wh) (wi) (wj) (wk) (wl) (wm) (wn) (wo) (wp) (wq) (wr) (ws) (wt) (wu) (wv) (ww) (wx) (wy) (wz) (xa) (xb) (xc) (xd) (xe) (xf) (xg) (xh) (xi) (xj) (xk) (xl) (xm) (xn) (xo) (xp) (xq) (xr) (xs) (xt) (xu) (xv) (xw) (xx) (xy) (xz) (ya) (yb) (yc) (yd) (ye) (yf) (yg) (yh) (yi) (yj) (yk) (yl) (ym) (yn) (yo) (yp) (yq) (yr) (ys) (yt) (yu) (yv) (yw) (yx) (yy) (yz) (za) (zb) (zc) (zd) (ze) (zf) (zg) (zh) (zi) (zj) (zk) (zl) (zm) (zn) (zo) (zp) (zq) (zr) (zs) (zt) (zu) (zv) (zw) (zx) (zy) (zz)

Figure 1. The effect of the concentration of the *Agrobacterium* suspension on the transformation efficiency of *Agrobacterium* strains. The *Agrobacterium* strains were grown in the medium containing 100 mg/l of tetracycline. The cell concentration of the *Agrobacterium* strains was adjusted to 10⁸ cells/ml. The cell suspension was mixed with the plant tissue and incubated for 24 h. The plant tissue was then cultured on the medium containing 100 mg/l of tetracycline. The transformation efficiency was determined by the number of colonies on the medium containing 100 mg/l of tetracycline. The data were expressed as the mean \pm SD of three independent experiments.

1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 26

$\frac{1}{2} \left(\frac{1}{2} + \frac{1}{2} \right) = \frac{1}{2}$

[illegible]

1. *Chlorophyll a* and *Chlorophyll b* were determined by the method of Arar and Collins (1971).

U. S. DEPT. OF COMMERCE, BUREAU OF COMMERCE.

JOHN: JERRY

[illegible]

Page 17-54

1000

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
1	JP 624160	AL	1997-01-6	JP 1996-0669	1996-03-6
2	PATENT 1,711,041	US	1998-06-23		

The compnls., with 100% moisture retention and 100% oil solubility, comprise
 aliph. and a spn. trivalent alcohol in **saccharides** and
 salts or derivatives of $\text{R1COOCH(R2)COOP(OH)} \cdot \text{R1CO} = \text{C6-22}$ and n. l. spn;
 R2 = Me, H; p = 1-30. Thus, a compn. was prepd. fr. a mixt. of 100%
 tall-oil and 100% oil mixt. 3, 95% EtOH 10, glycerol 7, sugar 10 and
 BHTA 1.5% in balanced water.

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250 251 252 253 254 255 256 257 258 259 260 261 262 263 264 265 266 267 268 269 270 271 272 273 274 275 276 277 278 279 280 281 282 283 284 285 286 287 288 289 290 291 292 293 294 295 296 297 298 299 300 301 302 303 304 305 306 307 308 309 310 311 312 313 314 315 316 317 318 319 320 321 322 323 324 325 326 327 328 329 330 331 332 333 334 335 336 337 338 339 340 341 342 343 344 345 346 347 348 349 350 351 352 353 354 355 356 357 358 359 360 361 362 363 364 365 366 367 368 369 370 371 372 373 374 375 376 377 378 379 380 381 382 383 384 385 386 387 388 389 390 391 392 393 394 395 396 397 398 399 400 401 402 403 404 405 406 407 408 409 410 411 412 413 414 415 416 417 418 419 420 421 422 423 424 425 426 427 428 429 430 431 432 433 434 435 436 437 438 439 440 441 442 443 444 445 446 447 448 449 450 451 452 453 454 455 456 457 458 459 460 461 462 463 464 465 466 467 468 469 470 471 472 473 474 475 476 477 478 479 480 481 482 483 484 485 486 487 488 489 490 491 492 493 494 495 496 497 498 499 500 501 502 503 504 505 506 507 508 509 510 511 512 513 514 515 516 517 518 519 520 521 522 523 524 525 526 527 528 529 530 531 532 533 534 535 536 537 538 539 540 541 542 543 544 545 546 547 548 549 550 551 552 553 554 555 556 557 558 559 560 561 562 563 564 565 566 567 568 569 570 571 572 573 574 575 576 577 578 579 580 581 582 583 584 585 586 587 588 589 590 591 592 593 594 595 596 597 598 599 600 601 602 603 604 605 606 607 608 609 610 611 612 613 614 615 616 617 618 619 620 621 622 623 624 625 626 627 628 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658 659 660 661 662 663 664 665 666 667 668 669 670 671 672 673 674 675 676 677 678 679 680 681 682 683 684 685 686 687 688 689 690 691 692 693 694 695 696 697 698 699 700 701 702 703 704 705 706 707 708 709 710 711 712 713 714 715 716 717 718 719 720 721 722 723 724 725 726 727 728 729 730 731 732 733 734 735 736 737 738 739 740 741 742 743 744 745 746 747 748 749 750 751 752 753 754 755 756 757 758 759 760 761 762 763 764 765 766 767 768 769 770 771 772 773 774 775 776 777 778 779 780 781 782 783 784 785 786 787 788 789 790 791 792 793 794 795 796 797 798 799 800 801 802 803 804 805 806 807 808 809 810 811 812 813 814 815 816 817 818 819 820 821 822 823 824 825 826 827 828 829 830 831 832 833 834 835 836 837 838 839 840 841 842 843 844 845 846 847 848 849 850 851 852 853 854 855 856 857 858 859 860 861 862 863 864 865 866 867 868 869 870 871 872 873 874 875 876 877 878 879 880 881 882 883 884 885 886 887 888 889 890 891 892 893 894 895 896 897 898 899 900 901 902 903 904 905 906 907 908 909 910 911 912 913 914 915 916 917 918 919 920 921 922 923 924 925 926 927 928 929 930 931 932 933 934 935 936 937 938 939 940 941 942 943 944 945 946 947 948 949 950 951 952 953 954 955 956 957 958 959 960 961 962 963 964 965 966 967 968 969 970 971 972 973 974 975 976 977 978 979 980 981 982 983 984 985 986 987 988 989 990 991 992 993 994 995 996 997 998 999 1000 1001 1002 1003 1004 1005 1006 1007 1008 1009 1010 1011 1012 1013 1014 1015 1016 1017 1018 1019 1020 1021 1022 1023 1024 1025 1026 1027 1028 1029 1030 1031 1032 1033 1034 1035 1036 1037 1038 1039 1040 1

[illegible]

	FANGLIN N.	FIND	DATE	APPLICATION N.	A/B
10	M-11867-	AL	1968-916	JF 1000-1-100	1-111-1
AB	The detergents contain A - 1,1-diepal stearate-type 1 surfactants derived from 16-22 aliph. acids and disaccharides +:				
	M = dipal acid and B = polyoxyethylene-type and/or -type 1 alkyl sulfonates at component ratio A/B = 1:5 to 5:1 and A + B = 5-50%. The surfactants are useful for dishwashing, laundry, and laundries. Thus, a surfactant composed of 5% fructose-5-epi-fructose-1,6-bisphosphate unit, 1,1-diepal ester was prepd. by treating 0.56 mole ethanol and 0.17-mole ME-surfactant in beta-picoline in the presence of 0.1 mole stabilized NaOH at 45 cm pressure with MeOH removal, removing the enzyme and 1/4 of the solvent and isolated ester, and reduced to 1/4 weight.				

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01 ANKARA 4 1978 HARBINGE TAYYINIMLA AYS
02 1944-1978 HARBINGE
03 1944-1978
04 B. Ross for preparation of alanyl glycine derivative
05 with n, Michael W.; Murray, Patrick M., J.; Roberts, Paul E.
06 Oxford, UK, USA
07 INT. Int. Appl., 1978.
08 PCTEN: SIXXIX
09 Patent
10 English
11 1978

| | PATENT N.° | PRIOR DATE | APPLICATION N.° | FILE |
|----|---|--------------|-----------------|------------|
| FI | WO 92/484 | AI 1992/11.9 | WO 1993-02461 | 1993.02.11 |
| | WI: AU, BG, BR, CA, DE, FI, HU, GB, IE, ES, NL, A, NL, IL, SG, SE, JP, CA | | | |
| | EW: AT, BE, CH, DE, DK, EG, ES, GB, GR, IE, IT, A, HU, NL, PT, SE | | | |
| | US 545719 | A 1992/11.9 | US 1992-0013 | 1992.01.09 |
| | RU 2040406 | AI 1992/11.9 | RU 1993-41498 | 1993.01.11 |
| | EP 46111 | AI 1992/4.6 | EP 1993-01191 | 1993.01.11 |
| | SI: DE, ES, FR, GB, IT | | | |
| | IL 11711 | TL 1992/01 | GB 1993-00457 | 1993.02.11 |
| DE | WO 1992-02138 | 1992.01.09 | | |
| | WO 1993-02461 | 1993.01.11 | | |

20 MARPAT 111-401-2
AB In the title process, a slurry of a hydrous saccharide source (e.g.,
sucrose monohydrate) in a first portion of an aliph. acid, temp. 10-
22 deg. is added to a second portion of the aliph. acid heated at an
elevated temp. and reduced pressure to form a mixt. with reduced water
content, an acid catalyst is added, and the aliph. acid
reacted with the saccharide source to form the glycoside.

1974, 1975

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| PATENT NO. | FIND | DATE | APPLICATION NO. | DATE |
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| | 1E-1700-01 | A | 1976-11-01 | 1E-1700-01 |
| | 1E-1700-02 | AI | 1976-11-01 | 1E-1700-02 |
| | 1E-1700-03 | A | 1976-11-01 | 1E-1700-03 |
| | 1E-1700-04 | A | 1976-11-01 | 1E-1700-04 |
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| 11 | 1E-1700-65 | AI | 1976-11-01 | 1E-1700-65 |
| 11 | 1E-1700-66 | AI | 1976-11-01 | 1E-1700-66 |
| 11 | 1E-1700-67 | AI | 1976-11-01 | 1E-1700-67 |
| 11 | 1E-1700-68 | AI | 1976-11-01 | 1E-1700-68 |
| 11 | 1E-1700-69 | AI | 1976-11-01 | 1E-1700-69 |
| 11 | 1E-1700-70 | AI | 1976-11-01 | 1E-1700-70 |
| 11 | 1E-1700-71 | AI | 1976-11-01 | 1E-1700-71 |
| 11 | 1E-1700-72 | AI | 1976-11-01 | 1E-1700-72 |
| 11 | 1E-1700-73 | AI | 1976-11-01 | 1E-1700-73 |
| 11 | 1E-1700-74 | AI | 1976-11-01 | 1E-1700-74 |
| 11 | 1E-1700-75 | AI | 1976-11-01 | 1E-1700-75 |
| 11 | 1E-1700-76 | AI | 1976-11-01 | 1E-1700-76 |
| 11 | 1E-1700-77 | AI | 1976-11-01 | 1E-1700-77 |
| 11 | 1E-1700-78 | AI | 1976-11-01 | 1E-1700-78 |
| 11 | 1E-1700-79 | AI | 1976-11-01 | 1E-1700-79 |
| 11 | 1E-1700-80 | AI | 1976-11-01 | 1E-1700-80 |
| 11 | 1E-1700-81 | AI | 1976-11-01 | 1E-1700-81 |
| 11 | 1E-1700-82 | AI | 1976-11-01 | 1E-1700-82 |
| 11 | 1E-1700-83 | AI | 1976-11-01 | 1E-1700-83 |
| 11 | 1E-1700-84 | AI | 1976-11-01 | 1E-1700-84 |
| 11 | 1E-1700-85 | AI | 1976-11-01 | 1E-1700-85 |
| 11 | 1E-1700-86 | AI | 1976-11-01 | 1E-1700-86 |
| 11 | 1E-1700-87 | AI | 1976-11-01 | 1E-1700-87 |
| 11 | 1E-1700-88 | AI | 1976-11-01 | 1E-1700-88 |
| 11 | 1E-1700-89 | AI | 1976-11-01 | 1E-1700-89 |
| 11 | 1E-1700-90 | AI | 1976-11-01 | 1E-1700-90 |
| 11 | 1E-1700-91 | AI | 1976-11-01 | 1E-1700-91 |
| 11 | 1E-1700-92 | AI | 1976-11-01 | 1E-1700-92 |
| 11 | 1E-1700-93 | AI | 1976-11-01 | 1E-1700-93 |
| 11 | 1E-1700-94 | AI | 1976-11-01 | 1E-1700-94 |
| 11 | 1E-1700-95 | AI | 1976-11-01 | 1E-1700-95 |
| 11 | 1E-1700-96 | AI | 1976-11-01 | 1E-1700-96 |
| 11 | 1E-1700-97 | AI | 1976-11-01 | 1E-1700-97 |
| 11 | 1E-1700-98 | AI | 1976-11-01 | 1E-1700-98 |
| 11 | 1E-1700-99 | AI | 1976-11-01 | 1E-1700-99 |
| 11 | 1E-1700-100 | AI | 1976-11-01 | 1E-1700-100 |

11. Polysaccharide matrices are esterified with polyunsaturated aliphatic acids which are prostaglandin precursors in the body. The ester can be administered orally, parenterally, or locally for anti-inflammation or induction of abortion. For example, 1,3-bis-(gamma-linolenyl)-1,3,5-trisubstituted benzene [1,3-bis-(gamma-linolenyl)-1,3,5-trisubstituted benzene] was treated with isobutyl 1,3-bis-(gamma-linolenyl)-1,3,5-trisubstituted benzene in the presence of N,N-dicyclohexylcarbodiimide to give 1,3-bis-(gamma-linolenyl)-1,3,5-trisubstituted benzene [1,3-bis-(gamma-linolenyl)-1,3,5-trisubstituted benzene] and isobutyl 1,3-bis-(gamma-linolenyl)-1,3,5-trisubstituted benzene [1,3-bis-(gamma-linolenyl)-1,3,5-trisubstituted benzene]. Dextran [1,3-bis-(gamma-linolenyl)-1,3,5-trisubstituted benzene] was esterified with the latter compound to give a polymer [1,3-bis-(gamma-linolenyl)-1,3,5-trisubstituted benzene] of 22.5% gamma-linolenyl groups.

1. *Journal of the American Medical Association*, 1997; 277: 1033-1038.

AN ANSWER 1 OF - HUAPLUS COPYRIGHT © 1987
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IN 1-10-1984
ON hydrophilically associating **alginate** derivatives: I. The
surface properties of their mixed aqueous solutions with oppositely
charged surfactants.
By: Berez, V. S.; Skoldov, E. A.; Lomon, I. G.; Pelletier, S.;
Hubert, P.; Dellacherie, E.
In: Hydrochemistry of Interfacial Phenomena International Conference, Moscow,
1986, Russia
J. Colloid Interface Sci. 103(1), 1986, 61-68, 6 refs.
CODEN: JCISAS; ISSN: 0021-8995
Academic Press
English
France
The comparative study of the interfacial properties of non-ionic
polysaccharide, such as **alginate** Alg-, and its
hydrophilically modified deriv. Alg-DEA, covalently substituted by
decyl chains. DEA poliol saccharide unit, was studied first in the
absence and in the presence of an oppositely charged cationic,
dodecyltrimethylammonium bromide (DTAB). The drastically different
results which were obtained are interpreted in terms of the arrangement and
mobility of the hydrophobic long alkyl chains, depending on the nature of
their fixation, covalent or ionic, on the **polysaccharide**
backbone. © 1987 Academic Press.
143-15-7D, 1-Bromododecane, **alginate** derivs.
1119-94-4, Dodecyltrimethylammonium bromide
alt: MCA Modifier or additive Use ; USES : Uses
hydrophilically assocg. **alginate** derivs. surface activn.
properties of their mixed aq. solns. with oppositely charged
surfactants.
143-15-7, HUAPLUS
Decane, 1-trimethyl- 6CI, 7CI, 8CI, 9CI, 10CI NOA INDEX NA 8

1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 26

| | | |
|----|------------------------------------|-------------------|
| RM | 1014-04-4 | HOWARDUS |
| TM | 1-Deoxy-2,3,5-trimethyl-, fluoride | DOI. 0 INDEX NAME |

Figure 1. Schematic representation of the experimental design. The subjects were divided into two groups: the control group and the experimental group. The control group was divided into two subgroups: the control group and the control group. The experimental group was divided into two subgroups: the experimental group and the experimental group. The control group was divided into two subgroups: the control group and the control group. The experimental group was divided into two subgroups: the experimental group and the experimental group.

● 11 1

17 9005-38-3, Sodium alginate 9005-38-3D, Sodium
 alginate, arylethyl derivs.
 R1: ESE Properties
 hydroph. slightly astring. **alginate** derivs. surface tension
 properties of their mixed aq. solns. with oppositely charged
 surfactants
 50 9005-38-3: HOMOLING
 51 Alginic acid, arylethyl salt R1, R2: 35 INDEX NAME

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
R1: E----- HRAFLUP
D1: ALHAMBRA, CALIF 90768 -CITY, DIST 1A INTER CDM

*** WING TYPE DIAGRAM IS NOT AVAILABLE ***
REFUEL CAP
WING AREA: 107.68 SQ FT
WING LOADING: 19.00 LBS/SQ FT
WING SPAN: 31.00 FEET
WING TIP CHORD: 11.00 FEET
WING ROOT CHORD: 11.00 FEET
WING TILT: 17.00 DEGREES

1. $\frac{1}{2} \times \frac{1}{2} = \frac{1}{4}$ 2. $\frac{1}{2} \times \frac{1}{2} = \frac{1}{4}$ 3. $\frac{1}{2} \times \frac{1}{2} = \frac{1}{4}$ 4. $\frac{1}{2} \times \frac{1}{2} = \frac{1}{4}$ 5. $\frac{1}{2} \times \frac{1}{2} = \frac{1}{4}$ 6. $\frac{1}{2} \times \frac{1}{2} = \frac{1}{4}$ 7. $\frac{1}{2} \times \frac{1}{2} = \frac{1}{4}$ 8. $\frac{1}{2} \times \frac{1}{2} = \frac{1}{4}$ 9. $\frac{1}{2} \times \frac{1}{2} = \frac{1}{4}$ 10. $\frac{1}{2} \times \frac{1}{2} = \frac{1}{4}$

100
 100
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1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 26

[illegible]

^a Values are means ± SD.

1. *Chlorophyll a* and *Chlorophyll b* were determined by the method of Arar and Collins (1971) using a Shimadzu 1601 UV-Visible Spectrophotometer. The concentration of chlorophylls was expressed in $\mu\text{g mL}^{-1}$.

[illegible]

1. *Chlorophyll a* (Chl *a*)

polysaccharide : 1000000

Membrant, Edouard; Dellacherie, Edith; Hubert, Patrick; Houzelle, Marie Christine; Pelletier, Sophie

1. The first step is to identify the problem or question that needs to be answered. This involves understanding the context and the specific requirements of the task.

See also: *Journal of the American Medical Association*, 1990, 263, 10, 1255-1256.

[illegible]

1. *Chlorophyll a* (Chl *a*)

1. *Staphylococcus aureus* (ATCC 12228) and *Staphylococcus epidermidis* (ATCC 12228) were grown in TSB medium (Difco) at 37°C. *Staphylococcus aureus* was grown in TSB medium supplemented with 0.5% yeast extract (Difco). *Staphylococcus epidermidis* was grown in TSB medium supplemented with 0.5% yeast extract (Difco). *Staphylococcus aureus* was grown in TSB medium supplemented with 0.5% yeast extract (Difco). *Staphylococcus epidermidis* was grown in TSB medium supplemented with 0.5% yeast extract (Difco).

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| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|----|--------------|------|------------|-----------------|------------|
| 11 | JP 57-116446 | A1 | 1982-07-22 | JP 1982-183007 | 1982-10-24 |
| | EP 2481677 | A1 | 1982-02-04 | EP 1982-04589 | 1982-04-21 |
| | RU 2443416 | A1 | 1980-06-04 | RU 1982-46416 | 1982-07-01 |

AB The invention provides a poly(ly-reversible wound dressing comprising a polysaccharide, esp. alginate, having aliphatic chains.

9005-32-7D, Aluminic acid, salts, reaction products and deriv.
 9005-32-7D, Aluminic acid, salts, reaction products and deriv.

Abb.: TH: Therapeutic use; BIOL: Biological study; I: In Use; N: Not recommended; wound dressing: Wundtulle.

[illegible]

1-3-1985

ALPHABETICALLY (FOL, TOI, CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

1. $\frac{1}{2} \times \frac{1}{2} = \frac{1}{4}$

Figure 1

[illegible]

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1 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 84

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1. 2. 3.

1. *Journal of the American Medical Association*, 1997; 277: 1033-1037.

Table 1. *Continued*

...the fact that the *in vitro* and *in vivo* results are in good agreement.

10. *Journal of the American Statistical Association*, 1997, 92, 1003-1012.

system: **date-alginate** (date: the prepared date
is determined immediately after the preparation is completed)

Hubert, Patrick; Miller, Sylvaine; Netter, Patricia; ...
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10 66-1-4, Faculté de Médecine, UMS 1561 CNRS, FR 1562 66, Laboratoire de
Physiologie, Physiopathologie et Pharmacologie Animales, UMR Nancy
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1. *Chlorophyll a* (Chl *a*) and *Chlorophyll b* (Chl *b*) were determined using the method of Lichtenthaler and Whistler (1987). The total chlorophyll content was determined using the method of Lichtenthaler and Whistler (1987). The total chlorophyll content was determined using the method of Lichtenthaler and Whistler (1987).

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1. *Chlorophyll a* (Chl *a*)

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With the aim of producing a biomaterial for surgical applications, the alginate-chitosan association was investigated. Two techniques were used to assess the existence of polymer interactions in aqueous solution. Alginate was obtained from algae and chitosan was purified from lobster shell. Viscometry measured the binding the capillary technique or the Couette flow, together with UV investigations, evidenced the moderate significance of interactions between the polysaccharides in all solns. In addition, the case of a charged soln. and using a mg/mL alginate was approached; the measurements in the flow mode; the behavior of the polymer association appeared as a compromise between those of individual polysaccharides.

9005-38-3, ~~control~~ alginate 9067-32-7, ~~control~~

analysis.

AL: FRA (Properties); THU (Therapeutic use); BIOL (biological study); USES (Uses)

Hyaluronate-alginate combination, for prepn. of a material

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K. S. CHAN AND S. C. CHENG

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| 11 | Hyaluronic acid, sodium salt (901) | (CA INDEX NAME) |
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*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

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1. The first group of people who are not in the labor force are those who are not in the labor force because they are not in the labor force.

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 98- 1000-0000, 1000-0000, 1000-0000
 99- 1000-0000, 1000-0000, 1000-0000
 100- 1000-0000, 1000-0000, 1000-0000

H₂O: CH₂-CH₂-Me

101- 1000-0000-0000
 102- 1000-0000-0000

H₂O: CH₂-CH₂-Me

103- 1000-0000-0000
 104- 1000-0000-0000

H₂O: CH₂-CH₂-Me

105- 1000-0000-0000
 106- 1000-0000-0000

107- 1000-0000-0000

108- 1000-0000-0000
 109- 1000-0000-0000
 110- 1000-0000-0000

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

111- 1000-0000-0000

112- 1000-0000-0000
 113- 1000-0000-0000

WIDE - 14, 15

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WIDE - 14, 15

SEARCHED BY JUAN HANLEY - 14, 15

14, 15

WITD 100-104, 1-1

SEARCHED BY J. VAN HANDEL 1-14-11

1-14-11

[illegible]

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01 ANSWER = 14 - "ALGinate" "RIGHT" "AN"
02 14-16-83 HCAPLUS
03 14-16-83
04 A six-valent coupling of a short polyether, sodium alginate;
05 alginic acid and its derivatives of the 4-sulfonate and 4-sulfate derivative
06 Dore, Marie-Joséphine; Leleste, Christine; Hubert, Patrick;
07 Dellacherie, Edith
08 Lab. Chim. Ind., Univ. Nancy I, Vandœuvre les Nancy, France, FR.
09 This paper, Polym. 1991, 16(4), 667-70
10 CLEN: CAPIDE; ISSN: 144-6617
11 Journal
12 English
13 AB A six-valent sodium alginate-polyoxyethylene model 1-11 was
14 prep'd by reductive amination of aldehydic sodium alginate, in
15 order to obtain a polymer with amphiphilic properties. Characterization
16 of this deriv. was carried out by NMR spectroscopy, viscosity measurements
17 and low-angle laser light scattering. The data obtained suggested a
18 limited rigidity of the polymer structure to expand, resulting from
19 internal self-aggregation and formation of hydrophobic microdomains.
20 9005-38-3DP, Sodium alginate, reacts to products with
21 alpha-amino, omega-ketoxyl tetra oxyethylene 86770-77-6DP,
22 reaction products with sodium alginate
23 ALI:SEEP Preparation
24 amphiphilic, synthesis and limited expansion capability of
25 14-16-83 HCAPLUS
26 Alginate acid, sodium salt (-SI, SCI) CEA INDEX NAME

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[illegible][illegible][illegible]

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L1# ANSWER 1 OF 1  HCAPLUS  COPYRIGHT 2000 ACS
AN  1  HCAPLUS  HCAPLUS
IN  133:343-5
TI  FT-Raman spectroscopy and Raman multispectral image analysis of alginate
wound dressings in vitro and in tissues
AU  Thirupia, Gopi; Despeignes, Philippe; Maingault, Philippe;
    Lefebvre, Pierre
AD  Laboratoire de Chimie Analytique, Universite de Tours, Tours, 37068, Fr.
    Spectrosc. Biol. Molec. New Dir., Eur. Conf., 9th, 1999, 133-519.
    Editor(s): Sieve, Jan; Ruppels, Berwin J.; Otto, Carol; Publisher: Plenum
    Academic Publishers, Dordrecht, Neth.
    ISBN: 1-4020-0000-0
DI  Conference
LA  English
AB  The structural organization of the calcium alginate fibers were studied by
    Raman multispectral imaging with red laser excitation.
EL  NT  11
AD

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- 1 018

FILE 'HOME' ENTERED AT 13:37:10 ON 26 SEP 2000

FILE 'HCAPLUS' ENTERED AT 13:37:14 ON 26 SEP 2000

L1 7 S MAINSALT P1 AU
 L2 137 S DELLACHERIE L1 AU
 L3 487 S HUBERT P1 AU
 L4 4 S NOVELLE M1 AU
 L5 371 S FELLETTIER S1 AU
 L6 1 S L1 AND L2 AND L3 AND L4 AND L5
 L7 971 S L1-5
 L8 18 S L7 AND ALGINAT?
 L9 106906 S ALIPHATIC
 L10 1 S L6 AND L9
 L11 111 S L9-85, POLYSACCHARID?
 L12 1 S L11 AND L9
 L13 37813 S POLYSACCH?
 L14 6 S L9 AND L13
 L15 4 S L7 AND WOUND?
 L16 3 S L14 OR L18
 SELECT RN L16 1-9

in ventor search

FILE 'REGISTRY' ENTERED AT 13:43:31 ON 26 SEP 2000

L17 20 S E1-2)

FILE 'HCAPLUS' ENTERED AT 13:43:45 ON 26 SEP 2000

L18 8 S L16 AND L17
 L19 1 S L16 NOT L18
 L20 17412 S PALGIN?
 L21 1537 S PALGIN? (L1 THU/RL
 L22 154 S L21 AND (WOUND OR DRESSING)
 L23 6 S L22 AND L11
 L24 6 S L23 NOT L15
 L25 366738 S AMMONIUM? OR NH4
 L26 101 S L21 AND L25
 L27 33 S L13 AND L26
 L28 30 S HYDRO WIGEL
 L29 3 S L29 AND L20
 L30 15671 S ALGINIC OR ALGINATE
 L31 3 S L28 AND L30
 L32 4 S L28 AND L26 AND L9
 L33 179 S GEL AND L26 AND L30
 L34 4 S L33 AND L9
 L35 692425 S CARBOXYL? OR ESTER?
 L36 1683 S L35 AND (L30 OR L30)
 L37 217 S L36 AND L35
 L38 69 S L37 AND L13
 L39 3 S L38 AND L9

8 citas w/ 20 cps displayed
1 cite no cps

FILE 'STINGUIDE' ENTERED AT 14:00:07 ON 26 SEP 2000

FILE 'HCAPLUS' ENTERED AT 14:09:35 ON 26 SEP 2000

L40 453894 S GEL(MASOL OR PREVERS?
 L41 3 S L38 AND L40
 L42 69 S L38 NOT L16
 L43 12 S L42 AND FYN1999
 L44 57 S L42 NOT L43

57 citas

FILE 'MEDLINE, BIOSIS, USPATFULL' ENTERED AT 14:13:16 ON 26 SEP 2000

L45 41341 S PALGIN? OR ALGINAT? OR ALGINIC
 L46 319515 S NH4 (S AMMONIUM?
 L47 648516 S GEL
 L48 1186311 S SOL OR SOLUTION
 L49 30290 S L47 OR L48
 L50 57634 S RHEG?
 L51 14815 S POLYSACCHARID?
 L52 101503 S LONG-CHAIN? OR ALIPHATIC?
 L53 11741 S L45 AND L51 OR ALKYL?

SEARCHED BY SUSAN HANLEY 9-24-00

Page 1

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|-----|---|--------------------|
| 114 | 14-45 S L63 AND L46 | |
| 115 | 1055 S L64 AND L47 OR L5 | |
| 116 | 1056 S L47 AND L55 | |
| 117 | 617 S L61 F ALPHYL OR L61 | |
| 118 | 1171 S L48 F ALPHYL OR L61 | |
| 119 | 6-31 S L67 OR L64 | |
| 120 | 617 S L69 F L46 | |
| 121 | 180 S L60 F L45 OR L49 | |
| 122 | 6 S L45 AND L61 | |
| 123 | 6 DVE REM L61 DUPLICATES REMOVED | |
| 124 | 48 S L63 AND MELICIN OR SURST OR WOUNG S L61, S L63 | |
| 125 | 7 S L63 AND MACROMOLECULE | |
| 126 | 1 S L61 AND MACROMOLECULE | |
| 127 | 15 S L61 AND L49 OR L61 | |
| 128 | 35 S L66 OR L67 | cites 1 1/2 only |
| 129 | 11 S L61 AND L68 | |
| 130 | 64 S L61 AND L63 | |
| 131 | 19 S L61 AND L64 | |
| 132 | 45 S L69 OR L71 | selected citations |